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ABSTRACT

In March 1992 the Arizona State Department of Education and educators across the state conducted a pilot study of 67 performance assessments developed for the Arizona Student Assessment Program (ASAP). This report describes various aspects of the reliability and validity of the 67 assessments (primarily constructed response) developed by The Riverside Publishing Company to measure essential skills in reading, mathematics, and writing in grades 3, 8, and 12. Eighteen assessments were administered to third graders, 23 to eighth-graders, and 26 to high school seniors. A total of 115,259 pilot assessments were scored, representing 1,023 schools in 208 districts. Assessments were scored by Arizona educators except for a small group professionally rated to establish calibration and anchor papers. Reliability values generally indicated that assessments could be reliably scored by a single rater. Validity was considered adequate for the majority of the assessments. Twenty-four tables present study findings, supplemented by 3 appendixes of correlations and validities, including 67 correlation tables and 13 scree plots. (Contains six references.) (SLD)

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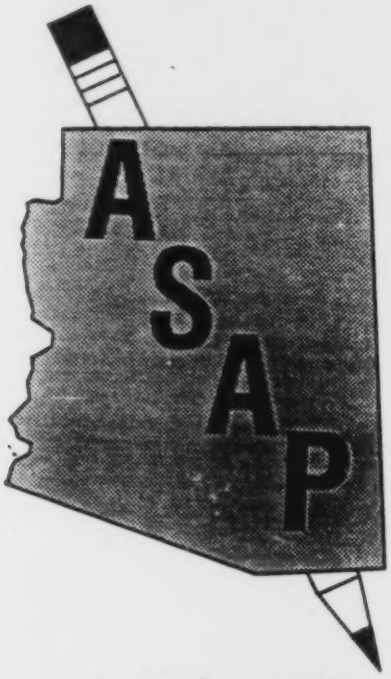


September, 1992

Prepared by

The Riverside Publishing Company

for

The Arizona Department of Education

C. Diane Bishop, Superintendent

1535 West Jefferson

Phoenix, Arizona 85007



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# ARIZONA STUDENT ASSESSMENT PROGRAM

## Technical Report

## for the

## March 1992 Pilot Study

September 1992


Prepared by
The Riverside Publishing Company

for

The Arizona Department of Education
C. Diane Bishop, Superintendent

1535 West Jefferson
Phoenix, Arizona 85007

Principal Research Investigators:

Nambury S. Raju Illinois Institute of Technology

David W. Osberg The Riverside Publishing Company

Sharon L. Frey The Riverside Publishing Company

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# EXECUTIVE SUMMARY

## Introduction

During March 1992, The Arizona Department of Education (ADE) and educators across the State conducted a pilot study of 67 performance assessments developed for the Arizona Student Assessment Program. Aggregated scores from this assessment were reported by the ADE along with comprehensive demographic information in the document Arizona Student Assessment Program: March 1992 Pilot Assessment Results: State of Arizona (1992).

The purpose of this Executive Summary is to describe various aspects of the reliability and validity of the 67 assessments administered in the March 1992 Pilot. A full report of this work is presented in the Technical Report. In order to provide a framework for the interpretation of these results, a brief summary of the development of the pilot assessments, the March 1992 sample, and the scoring activities are presented here.

## The Instruments

The development of ASAP performance assessment instruments began in 1989. The instruments were developed by The Riverside Publishing Company in close collaboration with the ADE and curriculum experts from the State of Arizona. A total of 67 Form A assessments were developed to measure Arizona Essential Skills in the areas of Reading, Mathematics, and Writing in grades 3, 8, and 12.

A field test of these instruments was conducted in spring 1990. The purpose of the field test was to determine whether the assessments could be administered by classroom teachers in typical classroom settings. A brief report on limited data from the field test was published by Riverside in September 1991 entitled Arizona Student Assessment Program: Technical Report for Form A Field Tests.

The Form A assessments were made available to all Arizona districts subsequent to the field test. A total of 134 additional assessments then were developed and made available for districts to administer at grades other than 3, 8, and 12.

Information from the Form A Field Test was used in the development of the revised Form A assessments that were administered during the March 1992 Pilot Study. Each of the 67 assessments was developed to measure unique clusters of related Arizona Essential Skills. Eighteen assessments were administered to third graders, twenty-three to eighth-graders, and twenty-six to high school seniors.

## The Sample

A total of 115,259 pilot study assessments were scored. The assessments were administered by 5,346 assessment administrators in 1,023 schools in 208 Arizona school districts. The average number of students taking each assessment was approximately 2,800 in Grade 3, 1,800 in Grade 8, and 900 in Grade 12.

Exactly one assessment was administered to each group of students. In Grade 3, where students are randomly assigned to classrooms within buildings, the assessments were randomly allocated across all classrooms in the state. In Grades 8 and 12, students are often assigned to classrooms on the basis of ability or performance. For these grades, students within each building were grouped randomly into clusters of approximately 30 and the assessments were randomly assigned to these clusters. Hence, each assessment was administered to an aggregate of students generally representative of the statewide population at each grade level.

## Scoring the Assessments

Unlike major assessment programs which rely exclusively on multiple-choice formats, the ASAP instruments relied primarily on constructed responses to each assessment exercise. It was necessary to score the assessment using classroom teachers as scorers. This required the development of a scoring system that would ensure optimal fidelity between the intent of the examinee and the judgment of the scorer.

Three kinds of constructed response modes were identified among the 67 assessments. Some of the responses were identified as dichotomous and carried a single score point. Others were "short answer" responses worth one or more score points. These responses elicited a more complex answer or series of dichotomous responses for which there may have been several correct alternatives. Still others involved creative responses that were more complex in nature--such as graphical solutions or essays. Detailed scoring guides were developed for all of the assessments with carefully constructed rubrics for the short answer and complex constructed response opportunities.

As stipulated by the ADE, all assessments were scored by Arizona educators except for approximately 4% which were scored by trained professional raters in order to identify anchor and calibration papers. Scoring took place at 15 sites in 9 counties across the State. The scorers were trained by staff from ADE, from Riverside, and from Measurement Incorporated, a Riverside subcontractor. Approximately 577 volunteer Arizona educators selected for their grade-level and content area expertise participated as site leaders, table leaders, and scorers. Scoring at each site was completed over a four-day period. Each site was carefully monitored and calibration was employed to ensure scoring consistency.

Scores for each assessment were recorded on standardized scannable scoring sheets. The scores were then aggregated for each assessment across the state. The data reported in the Technical Report provide information about some of the psychometric characteristics of the assessments. This information is summarized below.

## Reliability

Three kinds of reliability indices were reported and discussed for each assessment. Inter-rater correlations were reported for each assessment to provide information on the amount of scorer bias or rater error for each assessment. The amount of examinee error was assessed using coefficient alpha. Finally, generalizability indices were used to account for both rater and examinee error in a single index.

The median reliability indices for the reliability sample are reported in the table below. Also reported are the numbers of assessments in each subject area evaluated at each grade level and the averages of the numbers of items across assessments.

**Median Reliability Indices for ASAP Assessments**

| Subject | Grade | No. of Assmt's | Avg. No. of Items | Alpha | Inter-Rater r | Generalizability One Rater | Generalizability Two Raters |
|---|---|---|---|---|---|---|---|
| Reading | 3 | 5 | 14 | .76 | .88 | .71 | .76 |
| | 8 | 7 | 14 | .66 | .92 | .65 | .70 |
| | 12 | 9 | 16 | .69 | .88 | .65 | .71 |
| | Overall | 21 | 15 | .70 | .90 | .67 | .71 |
| Mathematics | 3 | 8 | 17 | .70 | .93 | .67 | .69 |
| | 8 | 8 * | 13 | .77 | .98 | .77 | .77 |
| | 12 | 8 | 14 | .74 | .97 | .72 | .74 |
| | Overall | 24 | 15 | .73 | .97 | .72 | .73 |
| Writing | 3 | 5 | 2 | .71 | .81 | .66 | .73 |
| | 8 | 6 * | 2 | .73 | .69 | .59 | .70 |
| | 12 | 9 | 2 | .85 | .71 | .69 | .81 |
| | Overall | 20 | 2 | .77 | .76 | .64 | .72 |

* No matched data were received for either 8M-4 or 8W-5.

The median alpha coefficients were .70 for Reading, .73 for Mathematics, and .77 for Writing. These values appear to be relatively high for these kinds of instruments, especially when the limited number of items per assessment is considered. The Reading and Mathematics Assessments each averaged 15 items. All Writing Assessments consisted of two items--each scored using a rubric.

Overall median inter-rater correlations were .90 for Reading, .97 for Mathematics, and .76 for Writing. These correlations were high for the Reading and Mathematics Assessments, but somewhat lower for the Writing Assessments. In general, however, these values indicate that these assessments can be scored reliably by a single rater.

Because they reflect estimates of both examinee and scorer "error", the generalizability indices are expected to be lower than the alpha coefficients and inter-rater correlations. However, the median generalizability indices generally appear to be within an acceptable range. The medians tend to be in the .70s. Those indices based on data from two raters are only slightly higher than those based on a single rater for Reading and Mathematics. This suggests that little is lost by having papers read by a single rater rather than two raters. The difference is somewhat greater for the Writing Assessments than for the Reading or Mathematics Assessments.

A comparison of inter-rater correlations obtained in the site-bias analysis with the intra-site values for the same assessments suggest that scoring site may be a source of small scoring error. The difference between intra-site inter-rater indices and those from different sites ranged from -.03 to .17, with the average difference slightly less than .07. The effect of scoring site on assessment scores is small.

The differences in reliability between response modes in reading and mathematics were also analyzed for the reliability sample. As expected, there was greater rater agreement on dichotomous-response questions than for short-answer questions. Both of these response modes showed higher rater consistency than for the responses that were scored using rubrics. It is interesting to note that there was perfect rater agreement ($r = 1.00$) on dichtomously-scored items on only two of the forty-five assessments that contained dichotomous answer type questions, and that the median inter-rater correlation across all of these assessments was only .95 for this item type.

## Validity

Three aspects of the validity of the ASAP instruments were reviewed: content validity, criterion-related validity, and construct validity.

The content validity of any assessment is dependent upon procedures employed during the development stage. As discussed earlier, each assessment was designed to measure a unique cluster of related Arizona Essential Skills. Iterative review and revision procedures were conducted over a period of three years to produce the instruments administered in the pilot study. Several groups of experts on content and fairness issues were employed during the process, as were the results from a large-scale field test on earlier versions conducted in spring 1990. These procedures ensured a high level of integrity of assessment content.

The research design included two criteria for assessing criterion validity-student scores on the ITBS and TAP and local ratings of student performance. The primary criterion was the scores obtained by the participating students on the ITBS (grades 2 and 7) and TAP (grade 11) during spring 1991. The correlations produced for ASAP scores with the ITBS/TAP Vocabulary, Reading Comprehension, Language Total, Mathematics Total and Composite scores are substantial. As expected, ASAP scores correlated consistently highest with ITBS/TAP Composite scores. The Reading and Language Assessment scores correlated most highly with ITBS/TAP Reading Comprehension and Language Total (Written Expression for TAP) scores, and ASAP Mathematics scores correlated most highly with ITBS/TAP Mathematics scores. The level of discriminant validity in these analyses was slightly lower than might have been expected because of the amount of reading and writing required for the Mathematics Assessments. The correlations for ASAP Reading and Mathematics subscores with all ITBS/TAP scores tended to increase with grade level. The strongest Writing correlations were observed for eighth graders.

The second criterion chosen consisted of student ratings made at the local (school or district) level. Many Arizona districts use CRTs to assess student performance in reading, mathematics, and language. However, there is no unified statewide CRT program. Those who use CRTs were asked to indicate for each participating student whether the student scored HIGH, MEDIUM, or LOW (according to district standards) in each of the three subject areas. Subsequent to the

administration of the pilot study, it was learned that there was confusion in a number of districts about how to respond to this request for data. In more than one district, this item was left blank. In others, responses were made using teacher ratings. Rather than exclude from this report the data that were provided, it was decided to report all of the obtained data.

One-way analyses of variance were carried out along with correlational analyses to assess the degree of relationship between scores on the ASAP instruments and the local rating scores. Unfortunately, the limited number of local rating scores for twelfth-grade students precluded the generation of meaningful comparisons for that grade. However, the data for grades 3 and 8 produced positive correlations indicating significant relationships between scores on the ASAP and the local rating indicators. These correlations were generally similar in magnitude to those obtained for comparisons of this sort in other measurement instrument/performance judgement studies.

Two analyses were performed to produce information about construct validity. Item analysis data are presented for each assessment in Appendix B of the Technical Report. Included are inter-item correlation values, item-test correlations, alpha coefficients, item difficulty values with standard deviations, and summary statistics. For the most part, these data represent highly acceptable values for this kind of assessment. However they tend to be less strong than similar data for well-constructed multiple-choice tests. This is typical for instruments that include constructed-response items.

For all but 13 of the 67 assessments, the factor analyses produced highest eigenvalues that accounted for 20% or more of the total variance. Four were Grade 3 Mathematics Assessments, and, except for one Grade-8 Mathematics Assessment, the remaining were Reading Assessments in Grades 8 and 12. Scree plots for these 13 assessments suggest a single relatively dominant factor for some of these assessments as well. The first eigenvalue in all of the Writing Assessments accounts for 75% or more of the total variance. It is safe to conclude that the majority of these assessments tend to achieve the unidimensionality for which they were intended.

## Conclusion

The ASAP program has already made an impact on instruction in Arizona school districts. The 1990 field test of preliminary Form A Assessments included 53 (25%) of the districts in the state. The Pilot Study was included in almost every school district. Three forms (preliminary Form A, Form B, and Form C) are currently available for all school districts to use as they see fit.

A major purpose of the Technical Report was to evaluate the psychometric characteristics of the 67 instruments that comprise the 1992 Pilot Study. The data show that, in general, these instruments meet acceptable psychometric standards for providing information that may be useful for contributing to decisions made about instructional programs and individual students. Additional work is planned that will focus on differences in performance among gender and ethnic groups.

No testing instrument can provide all of the information required for making intelligent educational decisions. Whenever decisions about individual students or educational programs incorporate test-score data, it is important that the limitations of the instrument are known. This Pilot Study was conducted under relatively low-stakes conditions. To the extent that these conditions can be preserved in future ASAP administrations, and to the extent that ASAP scores are used conjointly with other performance indicators to help guide decisions, these instruments generally display the technical strength to make positive contributions to the decision-making process.

## SECTION 1: INTRODUCTION

During March 1992, the Arizona Department of Education (ADE) and educators across the State conducted a pilot study of 67 performance assessments developed for the Arizona Student Assessment Program. Aggregated scores from this study were reported by the ADE along with comprehensive demographic information in the document Arizona Student Assessment Program: March 1992 Pilot Assessment Results: State of Arizona (1992).

The purpose of this document is to report on various aspects of the reliability and validity of the 67 assessments administered in the March 1992 Pilot. In order to provide a framework for the interpretation of these results, brief summaries of the development of the pilot assessments, the March 1992 sample, and the scoring activities are presented here.

### The Instruments

The development of the performance assessment instruments began in 1989. The instruments were developed by The Riverside Publishing Company in close collaboration with the ADE and curriculum experts from the State of Arizona. A total of 67 Form A assessments were developed to measure Arizona Essential Skills in the areas of Reading, Mathematics, and Writing in grades 3, 8, and 12.

A field test of these instruments was conducted in spring 1990. The purpose of the field test was to determine whether the assessments could be administered by classroom teachers in typical classroom settings. A brief report on limited data from the field test was published by Riverside in September 1991 entitled Arizona Student Assessment Program: Technical Report for Form A Field Tests.

The Form A assessments were made available to all Arizona districts subsequent to the field test. A total of 134 additional assessments were developed and made available for districts to administer at grades other than 3, 8, and 12.

Information from the Form A Field Test was used in the development of the revised Form A assessments that were administered during the March 1992 Pilot Study. Each of the 67 assessments was developed to measure a unique cluster of related Essential Skills. The distribution of assessments is provided below in Table 1.

**Table 1: Distribution of Assessments for the March 1992 Pilot Study**

| | Grade | | | |
|---|---|---|---|---|
| Subject Area | 3 | 8 | 12 | Total |
| Reading | 5 | 7 | 9 | 21 |
| Mathematics | 8 | 9 | 8 | 25 |
| Writing | 5 | 7 | 9 | 21 |
| Total | 18 | 23 | 26 | 67 |

## The Sample

A total of 115,259 pilot study assessments were scored. The assessments were administered by 5,346 assessment administrators in 1,023 schools in 208 Arizona school districts. In Grade 3, where students are randomly assigned to classrooms within buildings, the assessments were randomly allocated across all classrooms in the state. In Grades 8 and 12, students are often assigned to classrooms on the basis of ability or performance. For these grades, students within each building were grouped randomly into clusters of approximately 30 and the assessments were randomly assigned to these clusters. Hence, each assessment was administered to an aggregate of students generally representative of the statewide population at each grade level.

Exactly one assessment was administered to the students in each classroom or cluster. This ensured that the number of cases for each assessment would be sufficient for meaningful analyses with minimal encroachment on instructional time. The scope of the sample is summarized in Table 2. Exact numbers of assessments scored are reported by assessment in the ADE publication: Arizona Student Assessment Program: March 1992 Pilot Assessment Results (1992).

**Table 2: Sample Size and Distributions Across Assessments**

| Grade | Area | Number of Students | | | Number of Schools | |
|---|---|---|---|---|---|---|
| | | Range | Mean | Total | Range | Mean |
| 3 | Reading | 2672-3088 | 2887 | 14,437 | 94-123 | 112 |
| | Math | 2290-3065 | 2683 | 21,461 | 88-112 | 101 |
| | Writing | 2514-3070 | 2839 | 14,195 | 100-115 | 108 |
| | | | | 50,093 | | |
| 8 | Reading | 1543-2043 | 1867 | 13,071 | 54-69 | 64 |
| | Math | 1583-1881 | 1751 | 15,761 | 50-65 | 61 |
| | Writing | 1371-2017 | 1808 | 12,653 | 56-65 | 61 |
| | | | | 41,485 | | |
| 12 | Reading | 693-1070 | 920 | 8,280 | 31-40 | 38 |
| | Math | 639-1147 | 958 | 7,663 | 25-39 | 34 |
| | Writing | 785-1017 | 860 | 7,738 | 30-42 | 34 |
| | | | | 23,681 | | |

## Scoring the Assessments

It was decided by the ADE that the assessments would be scored by classroom teachers. Unlike major assessment programs which rely exclusively on multiple-choice formats, the ASAP instruments relied primarily on constructed responses to each assessment exercise. It was necessary to develop a scoring system that would ensure optimal fidelity between the intent of the examinee and the judgment of the scorer.

Three kinds of constructed response modes were identified among the 67 assessments. Some of the responses were identified as dichotomous and carried a single score point. Others were "short answer" responses worth one or more score points. These responses elicited a more complex answer or series of dichotomous responses for which there may have been several correct alternatives. Still others involved creative responses that were more complex in nature—such as graphical solutions or essays. Detailed scoring guides were developed for all of the assessments with carefully-constructed rubrics for the short answer and complex constructed response opportunities.

Although the ADE stipulated that all assessments be scored by Arizona educators, approximately 5000 assessments were scored by trained professionals from Measurement Incorporated (MI), a Riverside subcontractor. MI scored several hundred of these assessments in order to develop the anchor and calibration papers used in the scoring process and to pre-score papers for use in scorer training. MI also scored completed assessments that did not get processed through normal scoring procedures.

Scoring took place at 15 sites in 9 counties across the state. The scorers were trained by staff from ADE, from Riverside, and from MI. Approximately 577 volunteer Arizona educators selected for their grade-level and content area expertise were selected as site leaders, table leaders, and scorers. Scoring at each site was completed over a four-day period. Each site was carefully monitored and calibration activities were performed regularly.

Scores for each assessment were recorded on a standardized scannable scoring sheet (see Appendix A). The scores were then aggregated for each assessment across the state.

### Organization of this Report

Aggregated scores for the state were reported in the publication: Arizona Student Assessment Program: March 1992 Pilot Assessment Results published in July 1992 by the ADE. The data reported in this Technical Report provide information about the psychometric characteristics of the assessments. Section 2 reports information on reliability, including alpha coefficients, scorer bias, generalizability indices, and site bias. Section 3 deals with content, criterion, and construct validity of the assessments. Section 4 presents a summary of the findings. Additional data are reported in Appendices B and C.

## SECTION 2: RELIABILITY OF ASAP ASSESSMENTS

As previously noted, the Form A Assessments are performance-based tests, which differ from multiple-choice tests in one significant way: Each examinee is required to create a response rather than simply select an answer choice (Finch, 1991). In addition, performance-based tests are not machine-scorable and, therefore, require a teacher or an outside expert (rater) to score them using a set of guidelines or scoring rubrics. Hence, an examinee's score is affected not only by the examinee error but also by rater error/bias.

The commonly used alpha coefficient (Feldt & Brennan, 1989) estimates only the degree of examinee error in a set of scores but not the bias associated with the rater. On the other hand, the inter-rater reliability or the correlation between two sets of examinee scores generated by two different raters reflects only the degree of rater bias and not examinee error. Measurement techniques from generalizability theory (Brennan, 1983) can, however, be used to estimate a reliability (or generalizability) index reflecting both the examinee error and rater error. These refined measurement procedures were used to assess the reliability of the Form A Assessments. This phase of the analysis will hereafter be referred to as the "scorer bias analysis." In addition, measurement techniques from generalizability theory were also used to assess the degree of agreement across scoring sites—that is, the degree to which the scoring of the same assessment at two different sites would yield comparable results. This phase of the analysis will be referred to as the "site bias analysis."

## Scorer Bias Analysis

In order to assess scorer bias, an attempt was made to select a random sample of about 100 examinees per assessment to be scored by two different raters. In order to expedite the return of the assessments after they were scored to the classrooms in which they were administered, it was decided to randomly select four classroom packets of each assessment for double scoring. The expectation was that class/cluster size would average approximately 25, thereby providing approximately 100 cases per assessment. In some instances, fewer than four class/cluster packets were selected. As a result, there was a very low number of cases available for analysis for some assessments. For two assessments, no packets were selected for double scoring.

Results from the scorer bias analysis of the Form A Assessments are presented in Tables 3-11, with the data for the Reading Assessments appearing in Tables 3-5, for the Math Assessments in Tables 6-8, and for the Writing Assessments in Tables 9-11. Prior to discussing the rater bias results given in these tables, the format of these tables will be described below along with a brief description of the reported statistics. For example, data for all five Reading Assessments in Grade 3 are shown in Table 3. Summary statistics and reliability data are shown by assessment and item type (dichotomous, short answer, and rubric) and the total assessment score. In Table 3, there are four blocks of data, one for each of the three item types and the total score. The following information is presented for each assessment:

1. Assessment number

2. Number of items corresponding to a score type in that assessment

3. Maximum possible score

4. Number of examinees scored by the two raters

5. Summary statistics for Rater 1: Mean, Median, Mean as a Percent of the Maximum Possible Score, Standard Deviation (SD)

6. Summary statistics for Rater 2

7. Alpha reliabilities for Raters 1 and 2, and correlation between the Rater 1 and Rater 2 data (Inter-rater correlation)

8. Generalizability indices for one-rater and two-rater conditions

While the reported summary statistics for Rater 1 and Rater 2 may be considered routine, the mean raw score expressed as a percent of the maximum possible score will be useful as a measure of the average difficulty of a set of items included in an assessment for a given item type. As previously noted, the alpha (reliability) coefficient and inter-rater correlation coefficient reflect the examinee error and rater error/bias, respectively, whereas the generalizability indices reflect both these errors and therefore tend to be smaller than either the alpha coefficient or the inter-rater correlation. The last two columns in Table 3 show the generalizability indices for an assessment when scored with one or two raters.

A discussion of the relative strengths and weaknesses of the obtained reliability coefficients will be presented in Section 4 of this document.

Scorer Bias for Reading Assessments: Tables 3-5 show the reliability/generalizability data for the Reading Assessments in Grades 3, 8, and 12, respectively. Several factors should be considered in interpreting these data. First, even though the goal was to have 100 examinees double-scored as part of the scorer bias study, this goal was achieved only for a small portion of the 67 Form A Assessments. Scorer bias data based on just a few examinees (less than 50) should be interpreted very cautiously until additional data becomes available. Second, it is well known that many of the currently available reliability indices of a measure (especially the alpha coefficient and the generalizability index) depend upon the number of items that make up the measure. Other things being equal, longer tests are more reliable or generalizable than shorter tests. Therefore, subscores based on the three item types (dichotomous, short answer, and rubric) typically will have lower reliability/generalizability indices than the total assessment scores. Third, the generalizability index in general increases as a function of the number of raters. In most practical situations, however, it is not feasible to have more than a single rater and, hence, the generalizability indices for a single rater are presented in the accompanying tables along with the generalizability indices for two raters. Fourth, for subscores based on a single item, the alpha coefficient and the generalizability index are undefined and are therefore not reported in the following tables.

Finally, negative alpha coefficients were found on short-answer item types on three assessments—for one rater on 3R-5 and 12R-1 and both raters on 8R-5. This represents 4 (1%) of the 312 alpha coefficients reported. The items in these clusters apparently measure constructs that are unrelated or negatively related. This seldom occurs for large item sets, but can happen for small item sets. Since there were only two or three short-answer items on these three assessments, these findings are not serious. The values were converted to zero in order to be consistent with the requirements of the program used to generate the generalizability indices.

Grade 3: The sample sizes vary from a minimum of 5 examinees for Assessment 3 to a maximum of 101 examinees for Assessment 2. The alpha coefficients for the total scores range from .40 to .86 across the five Grade 3 Reading Assessments and the two raters. Similarly, the inter-rater correlations vary from .85 to .97, indicating a very high level of agreement between the two scorers. The generalizability indices vary from .46 to .86 for one rater and from .49 to .88 for two raters. The lowest alpha coefficients and generalizability indices are reported for Assessment 5, which also has the fewest items.

Concerning the subscores for the three item types, the reported reliability/generalizability indices in Table 3 are generally lower than those reported for the total assessment scores. As previously noted, these results are to be expected. In a few cases (short answer score for Assessment 1 and rubric scores for Assessments 3 and 5), alpha coefficients and generalizability indices are not reported because the associated subscores are based on a single item. It should also be noted that the reported reliability/generalizability indices are the highest for the dichotomous subscores, followed by the short answer and rubric subscores. In view of the greater subjectivity involved in the scoring of the short answer and rubric items compared to the dichotomous items, this result is in the expected direction.

As previously noted, generalizability indices increase as a function of the number of raters. The data in the last two columns of Table 3 show that the generalizability indices with two raters are higher than those with a single rater, but only by a small amount. This means that the use of a single rater to score the Form A Assessments may not significantly limit the generalizability of assessment scores.

## SUMMARY STATISTICS AND RELIABILITY DATA FOR READING - GRADE 3

| | | | | | SUMMARY STATISTICS | | | | | | | | RELIABILITY DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | RATER 1 | | | | RATER 2 | | | | RATER 1 | RATER 2 | INTER-RATER | GENERALIZABILITY INDICES | |
| | Assessment | Number of Items | Max Score | Number of Cases | Mean | Median | Mean* % Score | SD | Mean | Median | Mean* % Score | SD | Alpha | Alpha | r | One Rater | Two Raters |
| Dichotomous | 1 | 14 | 14 | 61 | 9.56 | 11.00 | 68 | 3.77 | 9.39 | 10.00 | 67 | 3.73 | 0.86 | 0.86 | 0 98 | 0 86 | 0 87 |
| | 2 | 3 | 3 | 101 | 2.32 | 3.00 | 77 | 0 86 | 2.33 | 3.00 | 78 | 0 88 | 0.45 | 0.52 | 0 95 | 0 47 | 0 48 |
| | 3 | 17 | 17 | 5 | 12.60 | 11.00 | 74 | 2.70 | 12.80 | 12 00 | 75 | 2.78 | 0.64 | 0.64 | 0 95 | 0 64 | 0 66 |
| | 4 | 16 | 16 | 94 | 12.82 | 13.50 | 80 | 2.99 | 12.79 | 13.50 | 80 | 2 84 | 0.80 | 0.78 | 0 94 | 0 76 | 0 78 |
| | 5 | 5 | 5 | 48 | 3.81 | 4.00 | 76 | 1.16 | 4.02 | 4 00 | 80 | 1 00 | 0 43 | 0.31 | 0 79 | 0 34 | 0 39 |
| Short Answer | 1 | 1 | 2 | 61 | 1.20 | 1.00 | 60 | 0.84 | 1.38 | 2.00 | 69 | 0.78 | - | - | 0 40 | - | - |
| | 2 | 2 | 5 | 101 | 3.55 | 4.00 | 71 | 1.72 | 3.59 | 4 00 | 72 | 1.67 | 0 47 | 0.38 | 0 93 | 0 43 | 0 44 |
| | 3 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5 | 3 | 9 | 48 | 8.13 | 9 00 | 90 | 1.18 | 8.17 | 8.00 | 91 | 1.02 | 0.16 | 0.00 | 0 89 | 0 03 | 0 03 |
| Rubric | 1 | 2 | 8 | 61 | 4.98 | 5 00 | 62 | 1 97 | 4.46 | 4 00 | 56 | 1 83 | 0 56 | 0 61 | 0 82 | 0 58 | 0 65 |
| | 2 | 4 | 16 | 101 | 9 81 | 10 00 | 61 | 2 95 | 9 87 | 10 00 | 62 | 2 59 | 0 79 | 0 69 | 0 67 | 0 56 | 0 68 |
| | 3 | 1 | 4 | 5 | 2 60 | 3 00 | 65 | 0 55 | 2 60 | 3 00 | 65 | 0 55 | - | - | 0 17 | - | - |
| | 4 | 2 | 8 | 94 | 5 20 | 5 00 | 65 | 1 20 | 4 91 | 5 00 | 61 | 1 31 | 0 08 | 0 67 | 0 51 | 0 21 | 0 29 |
| | 5 | 1 | 4 | 48 | 2 48 | 2 00 | 62 | 1 03 | 2 46 | 3 00 | 62 | 0 94 | - | - | 0 84 | - | - |
| Total Score | 1 | 17 | 24 | 61 | 15 72 | 17 00 | 66 | 5 65 | 15 23 | 16 00 | 63 | 5 52 | 0 85 | 0 86 | 0 97 | 0 86 | 0 88 |
| | 2 | 9 | 24 | 101 | 15 68 | 17 00 | 65 | 4 67 | 15 79 | 16 00 | 66 | 4 25 | 0 80 | 0 75 | 0 85 | 0 71 | 0 76 |
| | 3 | 18 | 21 | 5 | 15 20 | 14 00 | 72 | 2 68 | 15 40 | 15 00 | 73 | 2 97 | 0 59 | 0 65 | 0 87 | 0 57 | 0 61 |
| | 4 | 18 | 24 | 94 | 18 02 | 19 00 | 75 | 3 65 | 17 54 | 18 00 | 73 | 3 77 | 0 77 | 0 78 | 0 88 | 0 73 | 0 78 |
| | 5 | 9 | 18 | 48 | 14 42 | 15 00 | 80 | 2 52 | 14 65 | 15 00 | 81 | 2 08 | 0 56 | 0 40 | 0 89 | 0 46 | 0 49 |

*Mean score expressed as a percent of maximum possible score*

## TABLE 4
## SUMMARY STATISTICS AND RELIABILITY DATA FOR READING - GRADE 8

| | | | | | SUMMARY STATISTICS | | | | | | | | RELIABILITY DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | RATER 1 | | | | RATER 2 | | | | RATER 1 | RATER 2 | INTER RATER | GENERALIZABILITY INDICES | |
| | Assessment | Number of Items | Max Score | Number of Cases | Mean | Median | Mean* % Score | SD | Mean | Median | Mean* % Score | SD | Alpha | Alpha | r | One Rater | Two Raters |
| Dichotomous | 1 | 11 | 11 | 105 | 7.91 | 9.00 | 72 | 2.61 | 7.95 | 9.00 | 72 | 2.60 | 0.81 | 0.81 | 0.99 | 0.80 | 0.81 |
| | 2 | 7 | 7 | 94 | 5.01 | 5.00 | 72 | 1.74 | 4.76 | 5.00 | 68 | 1.76 | 0.67 | 0.68 | 0.80 | 0.60 | 0.67 |
| | 3 | 13 | 13 | 96 | 10.22 | 10.00 | 79 | 2.05 | 10.27 | 10.00 | 79 | 2.01 | 0.62 | 0.61 | 0.98 | 0.61 | 0.61 |
| | 4 | 5 | 5 | 101 | 3.15 | 3.00 | 63 | 1.03 | 3.03 | 3.00 | 61 | 1.07 | 0.19 | 0.33 | 0.38 | 0.24 | 0.35 |
| | 5 | 11 | 11 | 55 | 7.31 | 7.00 | 66 | 1.92 | 7.36 | 7.00 | 67 | 1.83 | 0.44 | 0.37 | 0.97 | 0.41 | 0.42 |
| | 6 | 1 | 1 | 58 | 0.59 | 1.00 | 59 | 0.50 | 0.59 | 1.00 | 59 | 0.53 | . | . | 0.94 | . | . |
| | 7 | 6 | 6 | 91 | 3.75 | 4.00 | 63 | 1.04 | 3.84 | 4.00 | 64 | 1.01 | 0.37 | 0.32 | 0.88 | 0.32 | 0.34 |
| Short Answer | 1 | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 2 | 4 | 16 | 94 | 9.72 | 10.00 | 61 | 3.05 | 9.43 | 9.50 | 59 | 3.04 | 0.51 | 0.46 | 0.93 | 0.49 | 0.52 |
| | 3 | 3 | 13 | 96 | 8.66 | 9.00 | 67 | 2.00 | 8.49 | 9.00 | 65 | 2.05 | 0.39 | 0.27 | 0.95 | 0.35 | 0.37 |
| | 4 | 5 | 10 | 101 | 8.20 | 9.00 | 82 | 1.54 | 8.19 | 8.00 | 82 | 1.53 | 0.62 | 0.61 | 0.99 | 0.61 | 0.61 |
| | 5 | 2 | 6 | 55 | 4.64 | 5.00 | 77 | 0.91 | 4.58 | 5.00 | 76 | 0.94 | 0.00 | 0.00 | 0.90 | 0.00 | 0.00 |
| | 6 | 6 | 18 | 58 | 9.35 | 10.00 | 52 | 3.65 | 9.19 | 9.00 | 51 | 4.10 | 0.75 | 0.81 | 0.91 | 0.78 | 0.83 |
| | 7 | 11 | 22 | 91 | 15.39 | 16.00 | 70 | 3.43 | 15.29 | 16.00 | 70 | 3.37 | 0.73 | 0.73 | 0.93 | 0.71 | 0.73 |
| Rubric | 1 | 3 | 10 | 105 | 5.10 | 5.00 | 51 | 1.61 | 5.31 | 5.00 | 53 | 1.73 | 0.47 | 0.52 | 0.63 | 0.44 | 0.55 |
| | 2 | 1 | 3 | 94 | 1.31 | 1.00 | 44 | 0.64 | 1.33 | 1.00 | 44 | 0.66 | . | . | 0.60 | . | . |
| | 3 | 1 | 4 | 96 | 1.92 | 2.00 | 48 | 1.01 | 2.28 | 2.00 | 57 | 1.00 | | | 0.75 | | |
| | 4 | 2 | 8 | 101 | 5.34 | 5.00 | 67 | 1.37 | 5.22 | 5.00 | 65 | 1.26 | 0.67 | 0.59 | 0.56 | 0.48 | 0.62 |
| | 5 | 3 | 11 | 55 | 6.56 | 6.00 | 60 | 2.17 | 6.40 | 6.00 | 58 | 1.86 | 0.64 | 0.60 | 0.77 | 0.59 | 0.66 |
| | 6 | 1 | 4 | 58 | 1.86 | 2.00 | 47 | 1.05 | 2.00 | 2.00 | 50 | 1.08 | . | . | 0.73 | . | . |
| | 7 | 1 | 4 | 91 | 2.57 | 3.00 | 64 | 0.96 | 2.57 | 3.00 | 64 | 0.99 | | | 0.75 | | |
| Total Score | 1 | 14 | 21 | 105 | 13.00 | 14.00 | 62 | 3.65 | 13.27 | 14.00 | 63 | 3.63 | 0.79 | 0.77 | 0.92 | 0.77 | 0.81 |
| | 2 | 12 | 26 | 94 | 16.04 | 16.50 | 62 | 4.37 | 15.51 | 16.00 | 60 | 4.29 | 0.67 | 0.63 | 0.92 | 0.65 | 0.67 |
| | 3 | 17 | 30 | 96 | 20.79 | 21.00 | 69 | 3.85 | 20.97 | 21.00 | 70 | 3.89 | 0.65 | 0.62 | 0.96 | 0.63 | 0.65 |
| | 4 | 12 | 23 | 101 | 16.63 | 17.00 | 72 | 2.93 | 16.44 | 17.00 | 71 | 2.76 | 0.64 | 0.64 | 0.83 | 0.64 | 0.70 |
| | 5 | 16 | 28 | 55 | 18.51 | 19.00 | 66 | 3.53 | 18.35 | 18.00 | 66 | 3.22 | 0.57 | 0.53 | 0.90 | 0.54 | 0.57 |
| | 6 | 8 | 23 | 58 | 11.79 | 12.00 | 51 | 4.56 | 11.78 | 12.00 | 51 | 4.99 | 0.79 | 0.83 | 0.92 | 0.81 | 0.84 |
| | 7 | 18 | 32 | 91 | 21.67 | 22.00 | 68 | 4.41 | 21.69 | 22.00 | 68 | 4.50 | 0.75 | 0.77 | 0.95 | 0.75 | 0.77 |

*Mean score expressed as a percent of maximum possible score





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## TABLE 5
## SUMMARY STATISTICS AND RELIABILITY DATA FOR READING - GRADE 12

| | | | | | SUMMARY STATISTICS | | | | | | | | RELIABILITY DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | RATER 1 | | | | RATER 2 | | | | RATER 1 | RATER 2 | INTER RATER | GENERALIZABILITY INDICES | |
| | Assessment | Number of Items | Max Score | Number of Cases | Mean | Median | Mean* % Score | SD | Mean | Median | Mean* % Score | SD | Alpha | Alpha | r | One Rater | Two Raters |
| Dichotomous | 1 | 6 | 6 | 93 | 5.24 | 5.00 | 87 | 1.00 | 5.22 | 5.00 | 87 | 0.92 | 0.51 | 0.38 | 0.84 | 0.45 | 0.49 |
| | 2 | 21 | 21 | 99 | 16.37 | 17.00 | 78 | 3.18 | 16.36 | 17.00 | 78 | 3.09 | 0.72 | 0.71 | 0.88 | 0.68 | 0.72 |
| | 3 | 16 | 16 | 91 | 12.70 | 13.00 | 79 | 2.05 | 12.73 | 13.00 | 80 | 2.21 | 0.51 | 0.55 | 0.86 | 0.53 | 0.55 |
| | 4 | 28 | 28 | 34 | 19.82 | 20.00 | 71 | 3.12 | 19.97 | 20.50 | 71 | 3.37 | 0.63 | 0.68 | 0.93 | 0.60 | 0.62 |
| | 5 | 8 | 8 | 93 | 4.44 | 4.00 | 56 | 1.94 | 4.19 | 4.00 | 52 | 2.01 | 0.64 | 0.67 | 0.85 | 0.61 | 0.66 |
| | 6 | 1 | 1 | 97 | 0.62 | 1.00 | 62 | 0.49 | 0.56 | 1.00 | 56 | 0.50 | . | . | 0.75 | . | . |
| | 7 | 14 | 14 | 98 | 9.58 | 10.00 | 68 | 2.12 | 9.50 | 10.00 | 68 | 2.23 | 0.53 | 0.57 | 0.92 | 0.55 | 0.58 |
| | 8 | 8 | 8 | 99 | 7.05 | 7.00 | 88 | 1.12 | 7.05 | 7.00 | 88 | 1.15 | 0.41 | 0.45 | 0.99 | 0.43 | 0.43 |
| | 9 | 2 | 2 | 95 | 1.07 | 1.00 | 54 | 0.75 | 1.06 | 1.00 | 53 | 0.74 | 0.46 | 0.48 | 0.82 | 0.47 | 0.51 |
| Short Answer | 1 | 2 | 6 | 93 | 2.66 | 3.00 | 44 | 1.22 | 2.50 | 3.00 | 42 | 1.14 | 0.12 | 0.00 | 0.64 | 0.00 | 0.00 |
| | 2 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 3 | 5 | 17 | 91 | 13.77 | 14.00 | 81 | 2.25 | 13.77 | 14.00 | 81 | 2.31 | 0.47 | 0.40 | 0.72 | 0.42 | 0.48 |
| | 4 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5 | 2 | 7 | 93 | 2.63 | 3.00 | 38 | 1.92 | 2.29 | 2.00 | 33 | 1.66 | 0.37 | 0.26 | 0.61 | 0.30 | 0.38 |
| | 6 | 7 | 18 | 97 | 8.74 | 9.00 | 49 | 3.60 | 8.47 | 8.00 | 47 | 3.53 | 0.62 | 0.61 | 0.88 | 0.60 | 0.64 |
| | 7 | 1 | 2 | 98 | 0.91 | 1.00 | 46 | 0.66 | 0.80 | 1.00 | 40 | 0.61 | . | . | 0.57 | . | . |
| | 8 | 6 | 21 | 99 | 13.06 | 13.00 | 62 | 2.66 | 13.22 | 14.00 | 63 | 2.98 | 0.19 | 0.38 | 0.82 | 0.32 | 0.36 |
| | 9 | 2 | 4 | 95 | 2.35 | 2.00 | 59 | 1.04 | 2.36 | 2.00 | 59 | 1.03 | 0.37 | 0.32 | 0.81 | 0.30 | 0.34 |
| Rubric | 1 | 2 | 7 | 93 | 4.11 | 4.00 | 59 | 1.67 | 4.36 | 4.00 | 62 | 1.60 | 0.58 | 0.35 | 0.33 | 0.21 | 0.31 |
| | 2 | 1 | 4 | 98 | 2.05 | 2.00 | 51 | 0.96 | 2.11 | 2.00 | 53 | 0.98 | . | . | 0.79 | . | . |
| | 3 | 1 | 4 | 90 | 2.32 | 2.00 | 58 | 0.97 | 2.33 | 2.00 | 58 | 0.99 | . | . | 0.63 | . | . |
| | 4 | 1 | 4 | 34 | 2.29 | 2.00 | 57 | 0.72 | 2.32 | 2.00 | 58 | 0.68 | . | . | 0.48 | . | . |
| | 5 | 2 | 8 | 93 | 4.57 | 4.00 | 57 | 1.93 | 4.30 | 4.00 | 54 | 1.91 | 0.53 | 0.57 | 0.70 | 0.52 | 0.61 |
| | 6 | 1 | 4 | 97 | 0.57 | 0.00 | 14 | 0.93 | 0.60 | 0.00 | 15 | 0.94 | . | . | 0.92 | . | . |
| | 7 | 2 | 8 | 98 | 5.00 | 5.00 | 63 | 1.94 | 5.00 | 5.00 | 63 | 1.77 | 0.59 | 0.59 | 0.85 | 0.61 | 0.69 |
| | 8 | 2 | 8 | 99 | 4.63 | 5.00 | 58 | 1.48 | 4.84 | 5.00 | 61 | 1.58 | 0.65 | 0.58 | 0.26 | 0.10 | 0.15 |
| | 9 | 1 | 3 | 95 | 1.44 | 1.00 | 48 | 0.88 | 1.60 | 1.00 | 53 | 0.88 | . | . | 0.75 | . | . |
| Total Score | 1 | 10 | 19 | 93 | 12.00 | 12.00 | 63 | 2.83 | 12.07 | 12.00 | 64 | 2.75 | 0.56 | 0.52 | 0.64 | 0.43 | 0.53 |
| | 2 | 22 | 25 | 99 | 18.40 | 19.00 | 74 | 3.66 | 18.43 | 19.00 | 74 | 3.59 | 0.72 | 0.71 | 0.88 | 0.68 | 0.72 |
| | 3 | 22 | 37 | 91 | 28.77 | 29.00 | 78 | 4.24 | 28.75 | 29.00 | 78 | 4.48 | 0.68 | 0.68 | 0.91 | 0.68 | 0.72 |
| | 4 | 29 | 32 | 34 | 22.12 | 22.00 | 69 | 3.56 | 22.29 | 23.00 | 70 | 3.77 | 0.68 | 0.71 | 0.92 | 0.65 | 0.68 |
| | 5 | 12 | 23 | 93 | 11.65 | 11.00 | 51 | 4.69 | 10.79 | 11.00 | 47 | 4.62 | 0.73 | 0.75 | 0.79 | 0.65 | 0.72 |
| | 6 | 9 | 23 | 97 | 9.92 | 9.00 | 43 | 4.33 | 9.63 | 9.00 | 42 | 4.33 | 0.70 | 0.70 | 0.91 | 0.69 | 0.72 |
| | 7 | 17 | 24 | 98 | 15.49 | 15.50 | 65 | 3.73 | 15.30 | 15.50 | 64 | 3.61 | 0.65 | 0.66 | 0.91 | 0.66 | 0.69 |
| | 8 | 16 | 37 | 99 | 24.74 | 26.00 | 67 | 3.89 | 25.11 | 25.00 | 68 | 4.37 | 0.49 | 0.59 | 0.75 | 0.46 | 0.53 |
| | 9 | 5 | 9 | 95 | 4.86 | 5.00 | 54 | 2.25 | 5.02 | 5.00 | 56 | 2.17 | 0.73 | 0.70 | 0.85 | 0.66 | 0.71 |

*Mean score expressed as a percent of maximum possible score

Grade 8: The sample sizes vary from a minimum of 55 for Assessment 5 to a maximum of 105 for Assessment 1. The alpha coefficients for the total scores vary from .53 to .83 across raters and assessments. The inter-rater correlations are mostly in the .90s, with Assessment 4 having the lowest value of .83. The generalizability indices vary from .54 to .84 for the total scores. As in Grade 3, the generalizability indices based on two raters are only slightly better than those based on a single rater.

Grade 12: All sample sizes are in the .90s with the exception of Assessment 4, which has a sample of 34 examinees. The total-score alpha reliabilities for the 9 assessments vary from .49 to .75 across the two raters. The inter-rater correlations range from .64 to .92, with most of them in the .80s and .90s. The generalizability indices range from .43 to .72, with most of them in the .60s and .70s. As expected, the generalizability indices are lower than the inter-rater correlations and alpha coefficients.

**Scorer Bias for the Mathematics Assessments**: Tables 6-8 display the reliability/ generalizability data for the Mathematics Assessments in Grades 3, 8, and 12, respectively.

Grade 3: With the exception of the sample size for Assessment 7, which has only 30 examinees, all sample sizes are between 93 and 100. The alpha coefficients vary from .41 to .83 across raters and assessments. The inter-rater reliabilities are in the .90s except for Assessment 3 and 7. The generalizability indices for the total scores are in the .54 to .78 range for the one-rater condition and in the .58 to .82 range for the two-rater condition. The exception again is Assessment 7, which has a zero generalizability index for both conditions. This assessment required that the student glue geometric figures in appropriate positions. Some classrooms used paste, which tended to dry and cause the figures to fall off the test booklets. To the extent that this occurred before or between scorings, all of the reliability indices could have been affected adversely.

Grade 8: The Grade 8 reliability/scorer bias data are shown in Table 7. The sample sizes vary from a minimum of 93 for Assessment 6 to a maximum of 201 for Assessment 1, with Assessment 4 having no data on double-scoring. The alpha coefficients for the total scores vary from .64 to .86 across raters and assessments. The inter-rater correlations are in the .90s, with the lowest value being .95 for Assessment 9. The generalizability indices for the total scores vary from .65 to .86 for both one-rater and two-rater conditions. The generalizability indices based on two raters are only slightly better than those based on a single rater. In general, the reliability and rater bias indices for Grade 8 Assessments are higher than those reported for Grade 3 (see Table 6).

Grade 12: Table 8 shows the reliability and generalizability indices for Grade 12 Mathematics Assessments. The sample sizes vary from a minimum of 9 for Assessment 8 to a maximum of 100 for Assessment 1. The alpha reliabilities for the 9 total assessment scores vary from .64 to .89 across the two raters. The inter-rater correlations range from .88 to .99, with almost all of them in the .90s. The generalizability indices range from .67 to .88 for the one-rater condition and from .70 to .88 for the two-rater condition, with most of them in the .70s and .80s. As expected, the generalizability indices tend to be lower than the inter-rater correlations and alpha coefficients. Compared to the Grade 3 indices, the reliability/generalizability indices for Grade 12 are higher.

**Scorer Bias for the Writing Assessments**: Tables 9-11 show the reliability/ generalizability data for the Writing Assessments in Grades 3, 8, and 12, respectively. Since the Writing Assessments consisted of only two prompts, both of which were scored using rubrics, Tables 9-11 show the psychometric data for only the total scores.

Grade 3: The sample sizes for the five assessments vary from 65 to 100, with Assessment 1 having the smallest sample size. The alpha coefficients for the five assessments vary from .53 to .87 across the two raters. The inter-rater correlations vary from .77 to .82, with four of the correlations in the .80s. The generalizability indices range from .54 to .85. Overall, these reliability/generalizability indices appear to be comparable in magnitude to those expected for these types of assessments with only two tasks.

Grade 8: Assessment 5 was not double-scored, and the sample size for Assessment 6 is only 20. The remaining five assessments have sample sizes ranging from 83 to 100 examinees. The alpha reliabilities vary from .54 to .91 across the two raters. The inter-rater correlations vary from .32 to .80, with Assessment 6 exhibiting the smallest correlation. The generalizability indices range from .31 to .80. Overall, the inter-rater reliabilities for Grade 8 Writing Assessments appear to be lower than those for Grade 3 Writing Assessments.

Grade 12: The sample sizes vary from 40 to 96 for the 9 Writing Assessments, with most of them below 90. The alpha reliabilities vary from .64 to .94, and the inter-rater correlations fluctuate between .52 and .93. The generalizability indices range from .47 to .89. The reported psychometric data for this grade appears to be similar to the data for Grade 3, but better than the data for Grade 8.

## Site Bias Analysis

There were two principal reasons for conducting the site bias analysis. Site-dependent factors such as scoring preparations and their implementation by the site leaders were bound to vary to some degree across the 15 scoring sites. Also, differential training received by participating teachers can affect the consistency of assessment scoring. Since these two factors can vary from site to site, it was deemed necessary to assess scoring variance across the 15 scoring sites.

Because of the large number of assessments involved and the expense associated with scoring all assessments by two raters at two different sites, a subset of nine assessments was chosen for inclusion in the site bias analysis. These nine assessments, representing three different grades and three different content areas, were used to assess site reliability. The nine assessments are:

Reading Assessment 1, Grade 3 (3R-1)

Reading Assessment 7, Grade 8 (8R-7)

Reading Assessment 2, Grade 12 (12R-2)

Mathematics Assessment 2, Grade 3 (3M-2)

Mathematics Assessment 1, Grade 8 (8M-1)

Mathematics Assessment 2, Grade 12 (12M-2)

Writing Assessment 3, Grade 3 (3W-3)

Writing Assessment 1, Grade 8 (8W-1)

Writing Assessment 6, Grade 12 (12W-6)

TABLE 8

## SUMMARY STATISTICS AND RELIABILITY DATA FOR MATHEMATICS - GRADE 3

| | | | | | SUMMARY STATISTICS | | | | | | | | RELIABILITY DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | RATER 1 | | | | RATER 2 | | | | RATER 1 | RATER 2 | INTER-RATER | GENERALIZABILITY INDICES | |
| | Assessment | Number of Items | Max Score | Number of Cases | Mean | Median | Mean* % Score | SD | Mean | Median | Mean* % Score | SD | Alpha | Alpha | r | One Rater | Two Raters |
| Dichotomous | 1 | 6 | 6 | 97 | 5.35 | 6.00 | 89 | 1.29 | 5.32 | 6.00 | 89 | 1.29 | 0.81 | 0.79 | 0.93 | 0.75 | 0.78 |
| | 2 | 18 | 18 | 93 | 17.03 | 18.00 | 95 | 1.56 | 17.09 | 18.00 | 95 | 1.40 | 0.67 | 0.61 | 0.93 | 0.62 | 0.64 |
| | 3 | 14 | 14 | 100 | 11.83 | 12.00 | 85 | 2.00 | 11.93 | 12.00 | 85 | 1.83 | 0.64 | 0.59 | 0.90 | 0.58 | 0.61 |
| | 4 | 17 | 17 | 100 | 15.20 | 16.00 | 89 | 2.49 | 15.18 | 16.00 | 89 | 2.42 | 0.81 | 0.80 | 0.96 | 0.79 | 0.81 |
| | 5 | 21 | 21 | 94 | 17.79 | 18.50 | 85 | 2.44 | 17.75 | 18.00 | 85 | 2.31 | 0.65 | 0.60 | 0.98 | 0.63 | 0.64 |
| | 6 | 7 | 7 | 100 | 5.76 | 6.00 | 82 | 1.54 | 5.75 | 6.00 | 82 | 1.55 | 0.69 | 0.69 | 1.00 | 0.69 | 0.69 |
| | 7 | 6 | 6 | 30 | 5.57 | 6.00 | 93 | 0.68 | 5.67 | 6.00 | 95 | 0.61 | 0.22 | 0.16 | 0.00 | 0.00 | 0.00 |
| | 8 | 7 | 7 | 99 | 4.97 | 5.00 | 71 | 1.30 | 4.96 | 5.00 | 71 | 1.28 | 0.45 | 0.45 | 0.89 | 0.44 | 0.46 |
| Short Answer | 1 | 5 | 10 | 97 | 7.92 | 9.00 | 79 | 2.86 | 7.77 | 8.00 | 78 | 2.82 | 0.82 | 0.80 | 0.88 | 0.75 | 0.80 |
| | 2 | 1 | 2 | 93 | 0.82 | 1.00 | 41 | 0.64 | 0.85 | 1.00 | 43 | 0.64 | - | - | 0.75 | - | - |
| | 3 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 4 | 4 | 9 | 100 | 6.51 | 7.00 | 72 | 2.04 | 6.49 | 7.00 | 72 | 2.03 | 0.49 | 0.52 | 0.92 | 0.50 | 0.52 |
| | 5 | 2 | 4 | 94 | 2.44 | 3.00 | 61 | 1.29 | 2.44 | 3.00 | 61 | 1.31 | 0.61 | 0.61 | 0.93 | 0.57 | 0.59 |
| | 6 | 3 | 6 | 100 | 4.85 | 5.00 | 81 | 1.27 | 4.85 | 5.00 | 81 | 1.28 | 0.31 | 0.36 | 0.97 | 0.32 | 0.33 |
| | 7 | 6 | 16 | 30 | 14.17 | 15.00 | 89 | 2.42 | 13.00 | 14.00 | 81 | 2.45 | 0.48 | 0.32 | 0.01 | 0.01 | 0.01 |
| | 8 | 10 | 22 | 99 | 15.78 | 16.00 | 72 | 3.78 | 15.69 | 16.00 | 71 | 3.89 | 0.66 | 0.67 | 0.93 | 0.63 | 0.65 |
| Rubric | 1 | 1 | 4 | 97 | 1.06 | 1.00 | 27 | 0.69 | 1.09 | 1.00 | 27 | 0.60 | - | - | 0.62 | - | - |
| | 2 | 2 | 6 | 93 | 2.49 | 3.00 | 42 | 1.46 | 2.52 | 3.00 | 42 | 1.54 | 0.51 | 0.58 | 0.85 | 0.53 | 0.57 |
| | 3 | 1 | 3 | 100 | 1.76 | 2.00 | 59 | 1.09 | 1.51 | 2.00 | 50 | 0.99 | - | - | 0.64 | - | - |
| | 4 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5 | 1 | 4 | 94 | 1.75 | 2.00 | 44 | 1.39 | 1.94 | 2.00 | 49 | 1.37 | - | - | 0.73 | - | - |
| | 6 | 2 | 5 | 100 | 3.30 | 4.00 | 66 | 1.38 | 3.13 | 3.00 | 63 | 1.39 | 0.47 | 0.50 | 0.73 | 0.49 | 0.57 |
| | 7 | 1 | 3 | 30 | 2.69 | 3.00 | 90 | 0.66 | 2.80 | 3.00 | 93 | 0.61 | - | - | 0.00 | - | - |
| | 8 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Score | 1 | 12 | 20 | 97 | 14.33 | 16.00 | 72 | 4.00 | 14.18 | 15.00 | 71 | 3.91 | 0.83 | 0.82 | 0.91 | 0.78 | 0.82 |
| | 2 | 21 | 26 | 93 | 20.34 | 21.00 | 78 | 2.79 | 20.45 | 21.00 | 79 | 2.85 | 0.66 | 0.67 | 0.93 | 0.67 | 0.69 |
| | 3 | 15 | 17 | 100 | 13.59 | 14.00 | 80 | 2.47 | 13.44 | 14.00 | 79 | 2.27 | 0.58 | 0.55 | 0.87 | 0.54 | 0.58 |
| | 4 | 21 | 26 | 100 | 21.71 | 23.00 | 84 | 4.00 | 21.67 | 23.00 | 83 | 3.93 | 0.78 | 0.78 | 0.97 | 0.78 | 0.79 |
| | 5 | 24 | 29 | 94 | 21.97 | 23.00 | 76 | 3.96 | 22.10 | 23.00 | 76 | 3.86 | 0.69 | 0.67 | 0.95 | 0.68 | 0.69 |
| | 6 | 12 | 18 | 100 | 13.91 | 14.00 | 77 | 3.32 | 13.73 | 14.00 | 76 | 3.34 | 0.72 | 0.73 | 0.95 | 0.73 | 0.75 |
| | 7 | 13 | 25 | 30 | 22.33 | 23.00 | 89 | 2.99 | 21.47 | 22.50 | 86 | 2.86 | 0.53 | 0.41 | 0.00 | 0.00 | 0.00 |
| | 8 | 17 | 29 | 99 | 20.75 | 21.00 | 72 | 4.44 | 20.65 | 20.00 | 71 | 4.59 | 0.70 | 0.71 | 0.93 | 0.67 | 0.69 |

*Mean score expressed as a percent of maximum possible score

## TABLE 7
## SUMMARY STATISTICS AND RELIABILITY DATA FOR MATHEMATICS - GRADE 8

| | | | | | SUMMARY STATISTICS | | | | | | | | RELIABILITY DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | RATER 1 | | | | RATER 2 | | | | RATER 1 | RATER 2 | INTER-RATER | GENERALIZABILITY INDICES | |
| | Assessment | Number of Items | Max Score | Number of Cases | Mean | Median | Mean* % Score | SD | Mean | Median | Mean* % Score | SD | Alpha | Alpha | r | One Rater | Two Raters |
| Dichotomous | 1 | 14 | 14 | 201 | 11.10 | 12.00 | 79 | 2.24 | 10.96 | 11.00 | 78 | 2.27 | 0.66 | 0.66 | 0.96 | 0.66 | 0.67 |
| | 2 | 10 | 10 | 99 | 4.94 | 5.00 | 49 | 2.56 | 4.98 | 5.00 | 50 | 2.56 | 0.74 | 0.74 | 0.96 | 0.73 | 0.74 |
| | 3 | 2 | 2 | 100 | 1.20 | 1.00 | 60 | 0.49 | 1.18 | 1.00 | 59 | 0.52 | 0.16 | 0.22 | 0.92 | 0.19 | 0.20 |
| | 4 | 9 | 9 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 5 | 4 | 4 | 99 | 1.85 | 2.00 | 46 | 1.25 | 1.86 | 2.00 | 47 | 1.24 | 0.56 | 0.55 | 1.00 | 0.55 | 0.55 |
| | 6 | 10 | 10 | 93 | 3.66 | 3.00 | 37 | 2.28 | 3.66 | 3.00 | 37 | 2.82 | 0.64 | 0.65 | 0.98 | 0.65 | 0.65 |
| | 7 | 7 | 7 | 100 | 3.46 | 3.00 | 49 | 1.98 | 3.40 | 3.00 | 49 | 2.02 | 0.73 | 0.75 | 0.96 | 0.73 | 0.74 |
| | 8 | 9 | 9 | 99 | 4.34 | 4.00 | 48 | 1.86 | 4.35 | 4.00 | 48 | 1.84 | 0.56 | 0.55 | 0.98 | 0.56 | 0.57 |
| | 9 | 4 | 4 | 100 | 2.45 | 2.00 | 61 | 1.18 | 2.49 | 3.00 | 62 | 1.16 | 0.54 | 0.54 | 0.90 | 0.48 | 0.50 |
| Short Answer | 1 | 2 | 4 | 201 | 2.47 | 2.00 | 62 | 1.20 | 2.51 | 2.00 | 63 | 1.21 | 0.21 | 0.24 | 0.97 | 0.22 | 0.23 |
| | 2 | 3 | 6 | 99 | 3.32 | 3.00 | 55 | 1.63 | 3.37 | 3.00 | 56 | 1.68 | 0.39 | 0.43 | 0.96 | 0.41 | 0.42 |
| | 3 | 6 | 19 | 100 | 12.33 | 14.00 | 65 | 4.91 | 12.37 | 15.00 | 65 | 5.04 | 0.74 | 0.75 | 0.98 | 0.74 | 0.75 |
| | 4 | 8 | 16 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 5 | 7 | 15 | 99 | 6.73 | 7.00 | 45 | 3.35 | 6.70 | 7.00 | 45 | 3.29 | 0.62 | 0.59 | 0.98 | 0.61 | 0.61 |
| | 6 | 6 | 14 | 93 | 5.20 | 5.00 | 37 | 3.84 | 5.15 | 5.00 | 37 | 3.78 | 0.78 | 0.77 | 0.98 | 0.77 | 0.78 |
| | 7 | 6 | 16 | 100 | 6.99 | 7.50 | 44 | 5.91 | 7.08 | 8.00 | 44 | 5.90 | 0.87 | 0.86 | 0.99 | 0.86 | 0.86 |
| | 8 | 4 | 11 | 99 | 6.56 | 7.00 | 60 | 2.83 | 6.47 | 7.00 | 59 | 2.80 | 0.46 | 0.43 | 0.97 | 0.45 | 0.45 |
| | 9 | 4 | 8 | 100 | 2.11 | 1.00 | 26 | 2.46 | 2.20 | 1.00 | 28 | 2.47 | 0.78 | 0.79 | 0.94 | 0.76 | 0.79 |
| Rubric | 1 | 2 | 6 | 201 | 3.09 | 3.00 | 52 | 1.41 | 3.10 | 3.00 | 52 | 1.38 | 0.11 | 0.21 | 0.82 | 0.13 | 0.14 |
| | 2 | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 3 | 3 | 6 | 100 | 3.58 | 4.00 | 60 | 1.51 | 3.66 | 4.00 | 61 | 1.47 | 0.40 | 0.40 | 0.80 | 0.37 | 0.41 |
| | 4 | 1 | 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 5 | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 6 | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 7 | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 8 | 1 | 2 | 99 | 0.74 | 1.00 | 37 | 0.75 | 0.66 | 0.00 | 33 | 0.77 | . | . | 0.76 | . | . |
| | 9 | 2 | 4 | 100 | 1.63 | 1.00 | 41 | 1.28 | 1.69 | 1.00 | 42 | 1.28 | 0.37 | 0.37 | 0.67 | 0.29 | 0.35 |
| Total Score | 1 | 18 | 24 | 201 | 16.66 | 17.00 | 69 | 3.80 | 16.56 | 17.00 | 69 | 3.82 | 0.69 | 0.70 | 0.96 | 0.69 | 0.70 |
| | 2 | 13 | 16 | 99 | 8.26 | 8.00 | 52 | 3.74 | 8.35 | 8.00 | 52 | 3.80 | 0.76 | 0.77 | 0.98 | 0.76 | 0.77 |
| | 3 | 11 | 27 | 100 | 17.11 | 19.00 | 63 | 6.07 | 17.21 | 19.00 | 64 | 6.11 | 0.77 | 0.77 | 0.98 | 0.77 | 0.77 |
| | 4 | 18 | 28 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 5 | 11 | 19 | 99 | 8.58 | 9.00 | 45 | 3.92 | 8.56 | 8.00 | 45 | 3.87 | 0.66 | 0.64 | 0.98 | 0.65 | 0.65 |
| | 6 | 16 | 24 | 93 | 8.86 | 8.00 | 37 | 5.79 | 8.81 | 8.00 | 37 | 5.70 | 0.83 | 0.83 | 0.99 | 0.83 | 0.83 |
| | 7 | 13 | 23 | 100 | 10.45 | 10.00 | 45 | 7.39 | 10.48 | 11.00 | 46 | 7.42 | 0.86 | 0.86 | 0.99 | 0.86 | 0.86 |
| | 8 | 14 | 22 | 99 | 11.64 | 11.00 | 53 | 4.60 | 11.48 | 11.00 | 52 | 4.51 | 0.69 | 0.67 | 0.98 | 0.68 | 0.69 |
| | 9 | 10 | 16 | 100 | 6.19 | 5.00 | 39 | 4.19 | 6.38 | 5.00 | 40 | 4.17 | 0.82 | 0.82 | 0.95 | 0.81 | 0.83 |

*Mean score expressed as a percent of maximum possible score

## TABLE 8
## SUMMARY STATISTICS AND RELIABILITY DATA FOR MATHEMATICS - GRADE 12

| | | | | | SUMMARY STATISTICS | | | | | | | | | | RELIABILITY DATA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | RATER 1 | | | | RATER 2 | | | | RATER 1 | RATER 2 | INTER-RATER | GENERALIZABILITY INDICES | |
| | Assessment | Number of Items | Max Score | Number of Cases | Mean | Median | Mean* % Score | SD | Mean | Median | Mean* % Score | SD | Alpha | Alpha | r | One Rater | Two Raters |
| Dichotomous | 1 | 5 | 5 | 100 | 1.71 | 2.00 | 34 | 1.15 | 1.70 | 2.00 | 34 | 1.13 | 0.36 | 0.35 | 0 92 | 0 33 | 0 35 |
| | 2 | 4 | 4 | 99 | 1.29 | 1.00 | 32 | 0.77 | 1.30 | 1.00 | 33 | 0.74 | 0.41 | 0.33 | 0 92 | 0 37 | 0 39 |
| | 3 | 4 | 4 | 88 | 1.91 | 1.00 | 48 | 1.25 | 1.90 | 2.00 | 48 | 1.16 | 0.65 | 0.52 | 0 86 | 0 57 | 0 61 |
| | 4 | 7 | 7 | 68 | 2.78 | 2.50 | 40 | 2.04 | 2.82 | 3.00 | 40 | 2.14 | 0.72 | 0.76 | 0 94 | 0 74 | 0 76 |
| | 5 | 10 | 10 | 99 | 6.38 | 7.00 | 64 | 2.33 | 6.25 | 7.00 | 63 | 2.42 | 0.71 | 0.74 | 0 88 | 0 68 | 0 72 |
| | 6 | 6 | 6 | 38 | 2.79 | 3.00 | 47 | 1.74 | 2.13 | 2.00 | 36 | 1.47 | 0.68 | 0.60 | 0 82 | 0 60 | 0 66 |
| | 7 | 6 | 6 | 98 | 2.25 | 2.00 | 38 | 1.81 | 2.20 | 2.00 | 37 | 1.80 | 0.75 | 0.74 | 0 99 | 0 74 | 0 75 |
| | 8 | 7 | 7 | 9 | 2.11 | 2.00 | 30 | 1.05 | 2.00 | 2.00 | 29 | 1.12 | 0.20 | 0.29 | 0 95 | 0 25 | 0 25 |
| Short Answer | 1 | 4 | 12 | 100 | 5.70 | 5.00 | 48 | 3.43 | 5.83 | 5.00 | 49 | 3.50 | 0.76 | 0.75 | 0 98 | 0 75 | 0 76 |
| | 2 | 5 | 11 | 99 | 5.15 | 4.00 | 47 | 2.74 | 5.15 | 4.00 | 47 | 2.75 | 0.59 | 0.60 | 0 99 | 0 59 | 0 60 |
| | 3 | 11 | 23 | 88 | 15.58 | 16.00 | 68 | 5.58 | 15.42 | 15.00 | 67 | 5.60 | 0.84 | 0.85 | 0 97 | 0 83 | 0 84 |
| | 4 | 6 | 17 | 68 | 7.00 | 6.00 | 41 | 4.44 | 7.00 | 6.00 | 41 | 4.40 | 0.78 | 0.77 | 0 99 | 0 78 | 0 78 |
| | 5 | 5 | 14 | 99 | 5.38 | 5.00 | 38 | 2.57 | 5.32 | 5.00 | 38 | 2.62 | 0.50 | 0.54 | 0 95 | 0 52 | 0 53 |
| | 6 | 4 | 9 | 38 | 4.42 | 5.00 | 49 | 2.25 | 3.66 | 3.00 | 41 | 2.11 | 0.56 | 0.57 | 0 74 | 0 46 | 0 52 |
| | 7 | 7 | 16 | 98 | 6.40 | 5.00 | 40 | 4.35 | 6.52 | 5.50 | 41 | 4.42 | 0.84 | 0.85 | 0 99 | 0 84 | 0 85 |
| | 8 | 10 | 20 | 9 | 2.78 | 3.00 | 14 | 2.54 | 2.56 | 3.00 | 13 | 2.24 | 0.51 | 0.40 | 0 99 | 0 47 | 0 48 |
| Rubric | 1 | 1 | 3 | 100 | 0 51 | 0 00 | 17 | 0 73 | 0 55 | 0 00 | 18 | 0 80 | . | . | 0 77 | . | . |
| | 2 | 2 | 7 | 99 | 3 73 | 4 00 | 53 | 1 80 | 3 61 | 4 00 | 52 | 1 69 | 0 38 | 0 34 | 0 86 | 0 31 | 0 33 |
| | 3 | 1 | 2 | 88 | 1 11 | 1 00 | 56 | 0 77 | 1 02 | 1 00 | 51 | 0 73 | . | . | 0 88 | | |
| | 4 | 1 | 2 | 68 | 0 60 | 0 00 | 30 | 0 87 | 0 62 | 0 00 | 31 | 0 86 | | | 0 89 | | |
| | 5 | 1 | 4 | 97 | 1 58 | 1 00 | 40 | 1 54 | 1 54 | 1 00 | 39 | 1 56 | . | . | 0 93 | | |
| | 6 | 3 | 10 | 38 | 4 53 | 5 00 | 45 | 2 24 | 4 58 | 5 00 | 46 | 2 16 | 0 52 | 0 48 | 0 89 | 0 48 | 0 50 |
| | 7 | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 8 | 1 | 2 | 9 | 0 56 | 0 00 | 28 | 0 73 | 0 33 | 0 00 | 17 | 0 50 | | | 0 11 | | |
| Total Score | 1 | 10 | 20 | 100 | 7 92 | 7 00 | 40 | 4 26 | 8 07 | 8 00 | 40 | 4 34 | 0 71 | 0 71 | 0 97 | 0 70 | 0 71 |
| | 2 | 11 | 22 | 99 | 10 15 | 10 00 | 46 | 4 38 | 10 06 | 10 00 | 46 | 4 21 | 0 69 | 0 68 | 0 97 | 0 69 | 0 70 |
| | 3 | 16 | 29 | 88 | 18 60 | 19 50 | 64 | 6 56 | 18 34 | 20 00 | 63 | 6 48 | 0 85 | 0 85 | 0 97 | 0 84 | 0 85 |
| | 4 | 14 | 26 | 68 | 10 38 | 8 00 | 40 | 6 79 | 10 44 | 8 00 | 40 | 6 82 | 0 86 | 0 86 | 0 99 | 0 86 | 0 87 |
| | 5 | 16 | 28 | 99 | 13 31 | 13 00 | 48 | 5 30 | 13 07 | 13 00 | 47 | 5 31 | 0 75 | 0 75 | 0 96 | 0 74 | 0 76 |
| | 6 | 13 | 25 | 38 | 11 74 | 13 00 | 47 | 4 83 | 10 37 | 11 00 | 41 | 4 38 | 0 73 | 0 70 | 0 88 | 0 67 | 0 71 |
| | 7 | 13 | 22 | 98 | 8 64 | 7 00 | 39 | 5 90 | 8 72 | 7 00 | 40 | 5 99 | 0 88 | 0 89 | 0 99 | 0 88 | 0 88 |
| | 8 | 18 | 29 | 9 | 5 44 | 6 00 | 19 | 3 97 | 4 89 | 5 00 | 17 | 3 33 | 0 73 | 0 64 | 0 98 | 0 69 | 0 71 |

*Mean score expressed as a percent of maximum possible score

## TABLE 9
## SUMMARY STATISTICS AND RELIABILITY DATA FOR WRITING - GRADE 3

| | | | | | SUMMARY STATISTICS | | | | | | | | RELIABILITY DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | RATER 1 | | | | RATER 2 | | | | RATER 1 | RATER 2 | INTER-RATER | GENERALIZABILITY INDICES | |
| | Assessment | Number of Items | Max Score | Number of Cases | Mean | Median | Mean* % Score | SD | Mean | Median | Mean* % Score | SD | Alpha | Alpha | r | One Rater | Two Raters |
| Total Score | 1 | 2 | 8 | 65 | 4.97 | 5.00 | 62 | 1.79 | 4.86 | 5.00 | 61 | 1.77 | 0.70 | 0.69 | 0.81 | 0.66 | 0.73 |
| | 2 | 2 | 8 | 95 | 4.65 | 4.00 | 58 | 1.42 | 4.28 | 4.00 | 54 | 1.64 | 0.76 | 0.71 | 0.81 | 0.68 | 0.76 |
| | 3 | 2 | 8 | 100 | 5.27 | 5.00 | 66 | 1.76 | 5.70 | 6.00 | 71 | 2.00 | 0.83 | 0.87 | 0.82 | 0.77 | 0.85 |
| | 4 | 2 | 8 | 98 | 5.28 | 5.00 | 66 | 1.64 | 4.82 | 5.00 | 60 | 1.52 | 0.53 | 0.53 | 0.77 | 0.54 | 0.63 |
| | 5 | 2 | 8 | 86 | 4.92 | 5.00 | 62 | 1.64 | 4.86 | 5.00 | 61 | 1.74 | 0.60 | 0.70 | 0.81 | 0.63 | 0.70 |

*Mean score expressed as a percent of maximum possible score

## TABLE 10
## SUMMARY STATISTICS AND RELIABILITY DATA FOR WRITING - GRADE 8

| | | | | | SUMMARY STATISTICS | | | | | | | | RELIABILITY DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | RATER 1 | | | | RATER 2 | | | | RATER 1 | RATER 2 | INTER RATER | GENERALIZABILITY INDICES | |
| | Assessment | Number of Items | Max Score | Number of Cases | Mean | Median | Mean* % Score | SD | Mean | Median | Mean* % Score | SD | Alpha | Alpha | r | One Rater | Two Raters |
| Total Score | 1 | 2 | 8 | 96 | 5.29 | 5.00 | 66 | 1.62 | 5.52 | 6.00 | 69 | 1.44 | 0.61 | 0.54 | 0.68 | 0.58 | 0.70 |
| | 2 | 2 | 8 | 83 | 5.19 | 5.00 | 65 | 1.84 | 5.64 | 6.00 | 71 | 1.73 | 0.83 | 0.80 | 0.70 | 0.68 | 0.80 |
| | 3 | 2 | 8 | 100 | 5.13 | 5.00 | 64 | 1.19 | 4.86 | 5.00 | 61 | 1.36 | 0.70 | 0.79 | 0.48 | 0.48 | 0.65 |
| | 4 | 2 | 8 | 97 | 5.45 | 6.00 | 68 | 1.77 | 5.32 | 5.00 | 67 | 1.70 | 0.73 | 0.70 | 0.74 | 0.60 | 0.69 |
| | 5 | 2 | 8 | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 6 | 2 | 8 | 20 | 4.80 | 5.00 | 60 | 1.74 | 5.00 | 5.00 | 63 | 1.69 | 0.86 | 0.91 | 0.32 | 0.31 | 0.46 |
| | 7 | 2 | 8 | 94 | 5.37 | 5.00 | 67 | 1.59 | 5.51 | 6.00 | 69 | 1.47 | 0.73 | 0.62 | 0.80 | 0.64 | 0.72 |

*Mean score expressed as a percent of maximum possible score

## TABLE 11
## SUMMARY STATISTICS AND RELIABILITY DATA FOR WRITING - GRADE 12

| | | | | | SUMMARY STATISTICS | | | | | | | | RELIABILITY DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | RATER 1 | | | | RATER 2 | | | | RATER 1 | RATER 2 | INTER RATER | GENERALIZABILITY INDICES | |
| | Assessment | Number of Items | Max Score | Number of Cases | Mean | Median | Mean* % Score | SD | Mean | Median | Mean* % Score | SD | Alpha | Alpha | r | One Rater | Two Raters |
| Total Score | 1 | 2 | 8 | 41 | 5.15 | 6.00 | 77 | 1.56 | 5.15 | 6.00 | 64 | 1.68 | 0.71 | 0.85 | 0 52 | 0 47 | 0 62 |
| | 2 | 2 | 8 | 75 | 4.76 | 5 00 | 60 | 1.73 | 5.03 | 5.00 | 63 | 2 01 | 0.80 | 0 87 | 0 79 | 0 73 | 0 82 |
| | 3 | 2 | 8 | 90 | 4.82 | 5.00 | 60 | 1.98 | 5.07 | 5.00 | 63 | 2 04 | 0.85 | 0.85 | 0 71 | 0 69 | 0 81 |
| | 4 | 2 | 8 | 96 | 5.10 | 5.00 | 64 | 1.61 | 5.60 | 6.00 | 70 | 1 55 | 0.72 | 0.78 | 0 59 | 0 50 | 0 62 |
| | 5 | 2 | 8 | 40 | 6.53 | 7.00 | 82 | 1.11 | 6.15 | 6.00 | 77 | 1.31 | 0.64 | 0.76 | 0 54 | 0 51 | 0 67 |
| | 6 | 2 | 8 | 63 | 5.48 | 6.00 | 69 | 1.98 | 5.41 | 6.00 | 67 | 1.88 | 0.85 | 0.87 | 0 59 | 0 57 | 0 72 |
| | 7 | 2 | 8 | 48 | 6.10 | 7.00 | 76 | 2.33 | 6.08 | 7.00 | 76 | 2.21 | 0.94 | 0 87 | 0 83 | 0 82 | 0 89 |
| | 8 | 2 | 8 | 47 | 4.96 | 5.00 | 62 | 2.39 | 4.98 | 6.00 | 62 | 2.46 | 0.86 | 0.82 | 0 93 | 0 83 | 0 86 |
| | 9 | 2 | 8 | 50 | 5.18 | 5.00 | 65 | 2.02 | 5.18 | 5 00 | 65 | 2.18 | 0.77 | 0.91 | 0 77 | 0.71 | 0 81 |

*Mean score expressed as a percent of maximum possible score*

A random sample of 100 scored papers was chosen for each assessment and the scoring was done at two different sites by two different raters, using the same scoring rubrics. The reliability/ generalizability results from the site bias analysis are presented in Table 12. The format of this table is identical to the format used for Tables 3-11.

The actual sample sizes for the nine assessments vary from a minimum of 53 for Assessment 12W-6 to a maximum of 113 for Assessment 8M-1. As in the case of the scorer bias analysis, the desired sample size of 100 examinees was not always achieved. The total score alpha reliabilities for the nine assessments vary from .49 to .87. The inter-site correlations based on the total assessment scores vary from a minimum of .49 for Assessment 12W-6 to a maximum of .97 for Assessment 12M-2. With the exception of 8W-1 and 12W-6, all Writing Assessments have high inter-site correlations, mostly in the .80s.

As in the case of scorer reliability, the most appropriate measure of site reliability is the generalizability index shown in the last column of Table 12 for two sites. These indices for the total assessment scores vary from a minimum of .54 for 3M-2 to a maximum of .82 for 3W-3.

As expected, the reported indices for the one-site condition are only somewhat lower than those reported for the two-site condition. This simply means that the loss of scoring accuracy is minimal when going from a two-site condition to a one-site condition, the one-site condition being easier and less expensive to implement in practice. Finally, as previously noted, the reported generalizability indices for the three subscores are generally lower than those reported for the total scores.

## SECTION 3: VALIDITY OF ASAP ASSESSMENTS

The American Psychological Association (APA), American Educational Research Association (AERA), and the National Council on Measurement in Education (NCME), in their Standards for Educational and Psychological Testing, suggest three types of validity for validating a test: Content Validity, Criterion-Related Validity, and Construct Validity (APA, AERA, & NCME, 1985). In light of these guidelines, this section presents the research conducted to assess the content, criterion-related, and construct validity of the ASAP Assessments.

### Content Validity

Arizona Revised Statutes 15-741, effective July 1, 1991, mandate that the State Board of Education shall ". . .adopt and implement essential skills tests that measure pupil achievement of the state board adopted essential skills in reading, writing and mathematics in grades three, eight, and twelve."

Before July 1, 1991, essential skills in reading, writing, and mathematics were developed with the assistance of teachers, administrators, and parent groups. The essential skills in each area are clustered in three levels and provide exit outcomes for grades 3, 8, and 12. Thus, these related essential skills documents serve two purposes:

1. They form the framework for local district curriculum development; and

2. They provide the content for the development of tests as mandated in ARS 15-741.

## TABLE 12
## SUMMARY STATISTICS AND RELIABILITY DATA FOR SITE-BIAS STUDY - GRADES 3, 8, 12

| | | | | | SUMMARY STATISTICS | | | | | | | | RELIABILITY DATA | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SITE 1 | | | | SITE 2 | | | | SITE 1 | SITE 2 | INTER-SITE | GENERALIZABILITY INDICES | |
| | Assessment | Number of Items | Max Score | Number of Cases | Mean | Median | Mean* % Score | SD | Mean | Median | Mean* % Score | SD | Alpha | Alpha | r | One Site | Two Sites |
| Dichotomous | 3R-1 | 14 | 14 | 69 | 12.26 | 13.00 | 88 | 2.29 | 12.32 | 13.00 | 88 | 2.21 | 0.78 | 0.78 | 0.92 | 0.76 | 0.79 |
| | 3M-2 | 18 | 18 | 108 | 16.94 | 17.00 | 94 | 1.56 | 9.48 | 10.00 | 53 | 0.77 | 0.66 | 0.24 | 0.72 | 0.30 | 0.39 |
| | 3W-3 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8R-7 | 6 | 6 | 73 | 4.16 | 4.00 | 69 | 0.93 | 3.95 | 4.00 | 66 | 0.96 | 0.28 | 0.27 | 0.78 | 0.27 | 0.31 |
| | 8M-1 | 14 | 14 | 113 | 9.41 | 10.00 | 67 | 2.96 | 9.47 | 10.00 | 68 | 3.02 | 0.77 | 0.79 | 0.97 | 0.78 | 0.79 |
| | 8W-1 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12R-2 | 21 | 21 | 95 | 14.65 | 15.00 | 70 | 3.94 | 15.26 | 16.00 | 73 | 3.71 | 0.78 | 0.76 | 0.85 | 0.70 | 0.76 |
| | 12M-2 | 4 | 4 | 100 | 1.58 | 1.00 | 40 | 0.84 | 1.55 | 1.00 | 39 | 0.83 | 0.35 | 0.34 | 0.95 | 0.34 | 0.35 |
| | 12W-6 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Short Answer | 3R-1 | 1 | 2 | 69 | 1.80 | 2.00 | 90 | 0.44 | 1.83 | 2.00 | 92 | 0.38 | - | - | 0.49 | | |
| | 3M-2 | 1 | 2 | 108 | 0.59 | 0.00 | 30 | 0.74 | 0.86 | 1.00 | 43 | 0.78 | - | - | 0.73 | | |
| | 3W-3 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8R-7 | 11 | 22 | 73 | 16.12 | 17.00 | 73 | 3.43 | 15.25 | 15.00 | 69 | 2.94 | 0.74 | 0.67 | 0.80 | 0.60 | 0.67 |
| | 8M-1 | 2 | 4 | 113 | 1.97 | 2.00 | 49 | 1.18 | 1.89 | 2.00 | 47 | 1.15 | 0.35 | 0.32 | 0.92 | 0.33 | 0.35 |
| | 8W-1 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12R-2 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12M-2 | 5 | 11 | 100 | 6.59 | 7.00 | 60 | 3.04 | 6.67 | 7.00 | 61 | 2.93 | 0.67 | 0.64 | 0.98 | 0.66 | 0.66 |
| | 12W-6 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Rubric | 3R-1 | 2 | 8 | 69 | 5.86 | 6.00 | 73 | 1.47 | 5.97 | 6.00 | 75 | 1.39 | 0.40 | 0.47 | 0.66 | 0.32 | 0.38 |
| | 3M-2 | 2 | 6 | 108 | 2.07 | 2.00 | 35 | 1.21 | 2.81 | 3.00 | 47 | 1.51 | 0.23 | 0.46 | 0.72 | 0.37 | 0.44 |
| | 3W-3 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 8R-7 | 1 | 4 | 73 | 2.48 | 2.00 | 62 | 0.96 | 2.63 | 3.00 | 66 | 1.01 | - | - | 0.72 | | |
| | 8M-1 | 2 | 6 | 113 | 3.03 | 3.00 | 51 | 1.62 | 2.83 | 3.00 | 47 | 1.61 | 0.33 | 0.47 | 0.75 | 0.37 | 0.42 |
| | 8W-1 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12R-2 | 1 | 4 | 93 | 2.28 | 2.00 | 57 | 1.10 | 1.89 | 2.00 | 47 | 0.99 | - | - | 0.71 | | |
| | 12M-2 | 2 | 7 | 100 | 4.72 | 5.00 | 67 | 1.99 | 4.73 | 5.00 | 68 | 2.17 | 0.62 | 0.54 | 0.91 | 0.58 | 0.61 |
| | 12W-6 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Score | 3R-1 | 17 | 24 | 69 | 19.91 | 21.00 | 83 | 3.20 | 20.12 | 21.00 | 84 | 3.07 | 0.71 | 0.72 | 0.86 | 0.68 | 0.73 |
| | 3M-2 | 21 | 26 | 108 | 19.60 | 20.00 | 75 | 2.58 | 13.14 | 13.00 | 51 | 2.31 | 0.62 | 0.49 | 0.76 | 0.48 | 0.54 |
| | 3W-3 | 2 | 8 | 103 | 5.59 | 6.00 | 70 | 1.82 | 5.42 | 6.00 | 68 | 1.96 | 0.73 | 0.75 | 0.85 | 0.74 | 0.82 |
| | 8R-7 | 18 | 32 | 73 | 22.77 | 24.00 | 71 | 4.54 | 21.82 | 22.00 | 68 | 3.92 | 0.78 | 0.71 | 0.85 | 0.68 | 0.73 |
| | 8M-1 | 18 | 24 | 113 | 14.41 | 15.00 | 60 | 4.73 | 14.19 | 15.00 | 59 | 4.86 | 0.78 | 0.81 | 0.96 | 0.79 | 0.81 |
| | 8W-1 | 2 | 8 | 96 | 5.60 | 6.00 | 70 | 1.71 | 5.17 | 5.50 | 65 | 1.85 | 0.73 | 0.87 | 0.59 | 0.51 | 0.64 |
| | 12R-2 | 22 | 25 | 95 | 16.83 | 17.00 | 67 | 4.61 | 17.12 | 18.00 | 68 | 4.21 | 0.79 | 0.77 | 0.85 | 0.70 | 0.76 |
| | 12M-2 | 11 | 22 | 100 | 12.89 | 13.00 | 59 | 4.88 | 12.95 | 13.00 | 59 | 4.91 | 0.75 | 0.73 | 0.97 | 0.74 | 0.75 |
| | 12W-6 | 2 | 8 | 53 | 5.57 | 5.00 | 70 | 1.28 | 6.25 | 7.00 | 78 | 1.48 | 0.75 | 0.68 | 0.49 | 0.44 | 0.59 |

*Mean score expressed as a percent of maximum possible score

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Each of the ASAP performance assessments was designed to measure a specific cluster of related essential skills. These clusters are listed as follows:

**Grade 3**

| Subject | Assessment Number | Essential Skills Group |
|---|---|---|
| Reading | 3R-1 | Reads and comprehends a personal experience narrative |
| | 3R-2 | Reads and comprehends a story |
| | 3R-3 | Reads and comprehends an informative report |
| | 3R-4 | Reads and comprehends a communication |
| | 3R-5 | Reads and comprehends a poem |
| Mathematics | 3M-1 | Classifies and sorts objects by observing relationships and making generalizations |
| | 3M-2 | Collects, organizes, represents and interprets data derived from surveys and experiments |
| | 3M-3 | Performs simple activities involving probability |
| | 3M-4 | Makes reasonable or logical conjectures and conclusions about situations |
| | 3M-5 | Chooses an appropriate unit of measure in a given situation |
| | 3M-6 | Uses a concrete model to create a pattern and represent that pattern symbolically |
| | 3M-7 | Uses visual attributes, concrete materials and appropriate vocabulary to identify, classify and describe common geometric figures and models |
| | 3M-8 | Interprets word problems by using role playing, pictures and models |
| Writing | 3W-1 | Writes a personal experience narrative |
| | 3W-2 | Writes an imaginary story |
| | 3W-3 | Writes a report based on personal observation |
| | 3W-4 | Writes a communication |
| | 3W-5 | Writes a poem |

**Grade 8**

| | | |
|---|---|---|
| Reading | 8R-1 | Reads and comprehends a personal experience narrative |
| | 8R-2 | Reads and comprehends a story |
| | 8R-3 | Reads and comprehends an informative report |
| | 8R-4 | Reads and comprehends a communication |
| | 8R-5 | Reads and comprehends a poem |
| | 8R-6 | Reads and comprehends a summary |
| | 8R-7 | Reads and comprehends an essay |
| Mathematics | 8M-1 | Finds the empirical probability of an event from a sample of observed outcomes |
| | 8M-2 | Determines the probability of simple events and draws conclusions or makes interpretations |

**Grade 8** (continued)

| Subject | Assessment Number | Essential Skills Group |
|---|---|---|
| | 8M-3 | Performs tasks involving inductive and deductive reasoning |
| | 8M-4 | Solves problems with measurements including distance, weight, time, area, capacity, and temperature |
| | 8M-5 | Through observation, measurement, drawing and modeling, identifies geometric properties such as symmetry, congruence, similarity, parallelism and perpendicularity |
| | 8M-6 | Draws and/or constructs a variety of shapes having the same area |
| | 8M-7 | Determines an expression or an equation for a relationship and then evaluates or solves it for a given value of the variable |
| | 8M-8 | Extends patterns and creates new ones |
| | 8M-9 | Appropriately uses terms such as "and," "or," "not," "only," and "if...then" in a mathematical sense |
| Writing | 8W-1 | Writes a personal experience narrative |
| | 8W-2 | Writes a story |
| | 8W-3 | Writes a report |
| | 8W-4 | Writes a communication |
| | 8W-5 | Writes a poem |
| | 8W-6 | Writes a summary |
| | 8W-7 | Writes a specialized expository paper |

**Grade 12**

| | | |
|---|---|---|
| Reading | 12R-1 | Reads and comprehends a personal experience narrative |
| | 12R-2 | Reads and comprehends fiction |
| | 12R-3 | Reads and comprehends an informative report |
| | 12R-4 | Reads and comprehends a communication |
| | 12R-5 | Reads and comprehends a poem |
| | 12R-6 | Reads and comprehends a summary |
| | 12R-7 | Reads and comprehends an essay |
| | 12R-8 | Reads and comprehends a persuasive passage |
| | 12R-9 | Reads and comprehends a review, evaluation, or critique |
| Mathematics | 12M-1 | Selects and uses appropriate principles of counting collections and arrangements of objects |
| | 12M-2 | Identifies and distinguishes between arithmetic and geometric progressions |
| | 12M-3 | Identifies and explains graphic misrepresentations or distortion of sets of data |

**Grade 12** (continued)

| Subject | Assessment Number | Essential Skills Group |
|---|---|---|
| | 12M-4 | Understands and applies basic geometric relationships |
| | 12M-5 | Uses appropriate standard units of measure to make reasonable estimates of linear, area, volume and weight measures |
| | 12M-6 | Uses deductive reasoning to generate conclusions |
| | 12M-7 | Identifies, interprets and constructs graphs of nonlinear relations such as parabolas and circles |
| | 12M-8 | Selects and uses appropriate statistical measures to describe sets of data |
| Writing | 12W-1 | Writes a personal experience narrative |
| | 12W-2 | Writes a short story |
| | 12W-3 | Writes a report |
| | 12W-4 | Writes a communication |
| | 12W-5 | Writes a poem |
| | 12W-6 | Writes a summary |
| | 12W-7 | Writes an essay |
| | 12W-8 | Writes a persuasive paper |
| | 12W-9 | Writes an evaluation or critique |

Development of the ASAP performance assessments began in 1989. Staff members from The Riverside Publishing Company and the ADE worked collaboratively to develop Form A of the assessments. Progress was reviewed regularly by Arizona curriculum specialists, and the assessments were field tested in Arizona schools in spring 1990. Approximately 4,800 pupils in grades 3, 8, and 12 were selected for the field test.

The Form A Assessments were revised based on comments from district curriculum specialists and the teachers who administered the field-test instruments. The revised instruments were distributed to all districts in fall 1990. The Form A Assessments were reproduced and distributed to teachers. They were used with students and in staff development activities during the 1990-91 school year. District teachers, principals, and others critiqued the assessments and submitted comments to ADE by the end of the school year. In addition, panels of teachers reviewed the assessments for content and bias.

Using the information from these reviews, ADE and Riverside made still further revisions during the summer and fall of 1991 creating the versions of the Form A Assessments that were administered in spring 1992 to provide the data base for this Technical Report.

In addition, two additional forms (B and C) have been developed and released to Arizona districts. Forms B and C are designed to assess the same essential skills in grades other than 3, 8, and 12. Districts thus have access to 201 (3 x 67) performance assessments for use in grades 1-12. Finally, six additional Spanish-language assessments were developed to be administered to third-graders during the spring 1992 pilot study. Data from these Spanish-language assessments were not available for inclusion in this Technical Report.

In summary, the 67 performance assessments used in the pilot study have undergone numerous reviews by curriculum and assessment specialists, teachers, principals, and other Arizona educators. Earlier versions were field tested and revised on the basis of information that resulted from that activity. Every reasonable effort has been made to ensure that each assessment reflects accurately the cluster of essential skills it is designed to measure.

## Criterion-Related Validity

Criterion-related validity refers to a systematic relationship between the test at hand and one or more outcome criteria. The relationship that is of primary concern here is how well scores on the ASAP assessments covary with scores on an independent measure that is designed to tap the same essential skills. The ASAP research design included two measures of criterion-related validity. The first criterion consisted of scores obtained on the Iowa Tests of Basic Skills (ITBS) and Tests of Achievement and Proficiency (TAP). The second criterion was a local (school-based) rating of individual student performance.

To ensure sufficient sample sizes for the validity analyses, a separate validity sample was selected. Approximately 500 students per assessment were randomly selected from the matched data file provided by ADE. For Grade 12, this meant inclusion of the entire matched statewide sample due to the relatively few cases with local rating data. Only two of the twelfth-grade assessments (12M-7 and 12W-3) resulted in over 30 students with local rating data. This was considered insufficient for the second criterion validity analysis. For grades 3 and 8, an average of 22%, out of the nearly 500 sampled per assessment, had local ratings, with the majority numbering in the hundreds. This was considered an adequate sampling for the purposes of analysis.

**Relationship Between ASAP Assessments and ITBS/TAP Scores**: The ASAP was administered in spring 1992. During spring 1991, all Arizona students in grades 2, 7, and 11 were administered the appropriate levels of ITBS/TAP under the Arizona Statewide NRT Testing Program. These ITBS (for Grades 3 and 8) and TAP (for Grade 12) scores were obtained for individual students from existing data files and matched with the ASAP scores. Even though several different subscores are routinely reported for the ITBS/TAP batteries, only subscores considered appropriate for this analysis were included. In Grades 3 and 8, the ASAP Assessment scores were correlated with the Vocabulary, Reading Comprehension, Language Total, Mathematics Total, and Complete Composite scores from the ITBS. In Grade 12, correlations were obtained between the ASAP scores and the Reading Comprehension, Mathematics, Written Expression, and Basic Composite scores from the TAP. Results from this analysis are presented in Tables 13-15 for Grades 3, 8 and 12, respectively.

**ASAP and ITBS Correlations for Grade 3**: Table 13 shows the correlations between the five ITBS scaled scores (Vocabulary Reading, Language Total, Math Total, and Complete Composite) and the 18 Grade 3 ASAP Assessments. Also shown in this table are the sample size for each correlation and the means and standard deviations expressed in developmental standard score (DSS) units for each of the ITBS/TAP scores by ASAP Assessment sample. The statewide ITBS/TAP scaled score means are also reported.

With one exception (3R-5), all correlations are in the .20 - .64 range. All correlations, however, are statistically significant at the .05 level. In general, the Vocabulary, Reading, Language Total scores from the ITBS have slightly higher correlations with the Reading and Writing ASAP Assessments than with the Mathematics Assessments. Similarly, the Mathematics

Total score from the ITBS has somewhat higher correlations with the Mathematics Assessments than with the Reading and Writing Assessments. Most of the correlations between the ITBS Complete Composite and the ASAP Assessments are in the .40 - .50 range. The ITBS Composite correlations are, as expected, slightly higher than the correlations with the other ITBS subscores. The significant and sizable correlations between the ITBS subscores and ASAP Assessments offer additional support for the validity of the ASAP Assessments.

**ASAP and ITBS Correlations for Grade 8**: Table 14 shows the correlations between the ASAP Assessments and the ITBS subscores for Grade 8. The format for this table is identical to the format described above for Table 13.

Most of the correlations between the ITBS subscores and the ASAP Assessments are in the .40-.60 range, which is somewhat higher than the range reported for Grade 3. As in the case of Grade 3, the Reading and Language Total scores tend to correlate somewhat higher with the Reading and Writing Assessments than with the Mathematics Assessments. Similarly, the Mathematics Total scores correlate higher with the Mathematics Assessments than with the Reading and Writing Assessments. As in Grade 3, the substantial correlations shown in Table 14 offer evidence of the criterion-related validity of the Grade 8 ASAP Assessments.

**ASAP and TAP Correlations for Grade 12**: Table 15 shows the correlations between the four TAP scores (Reading Comprehension, Mathematics, Written Expression, and Basic Composite) and the Grade 12 ASAP Assessments. All correlations are statistically significant and most of these correlations are in the .40 - .60 range, which is similar to the range of correlations obtained for Grade 8. While the Reading and Writing Assessments correlate higher with the Reading Comprehension and Written Expression subscores than with the Mathematics subscore of the TAP, the Mathematics ASAP Assessments correlate substantially with all TAP subscores, with a slight edge for the Mathematics subscore. This probably reflects the fact that the Grade 12 Math Assessments contain substantial amounts of both mathematics and reading material. Finally, the significant and substantial correlations in Table 15 attest to the high degree of criterion-related validity for the Grade 12 ASAP Assessments.

**Relationship Between ASAP Assessments and Local Ratings**: As part of gathering data on the ASAP Assessments, the participating schools were asked to report any local CRT data for each of their students in Grades 3, 8, and 12. The CRT data were sought for three content areas: reading, mathematics, and language. Space was provided on the standardized scoring sheet (see Appendix A), for reporting CRT ratings as HIGH, MEDIUM or LOW. Subsequent to the administration of the assessments, it was learned that several districts used substitute criteria for these ratings. Others entered no rating at all. Those districts that used substitute ratings tended to base them on teacher judgment of performance. Rather than to dismiss the rating data altogether, it was decided that the aggregation of CRT data and teacher judgment data would provide a legitimate "local rating" (LR) criterion against which to compare assessment scores. One reason for this decision is that there is no single statewide CRT testing program that would constitute a single criterion for this comparison. Where CRTs are used, they tend to vary in content substantially across districts. Second, a CRT score for an individual is, after all, only an estimate of the level of mastery on a well-defined skill. Another legitimate source of estimate is the judgment of a teacher of the individual. However obtained, the score entered on the scannable scoring sheet represents a local rating of a students' general performance on skills in the three subject areas.

Several one-way analysis of variance (ANOVA) runs were carried out to determine the degree to which students with High LR scores also performed well on the ASAP Assessments. For each assessment, students with LR scores in a given content area were divided into three mutually exclusive subgroups based on their reported LR scores: HIGH, AVERAGE, and LOW. These three subgroups formed the basis for the one-way analysis of variance with the ASAP score as the dependent variable. In addition, the LR designations (HIGH = 3, AVERAGE = 2, LOW = 1) were correlated with the ASAP Assessment scores. Results from these analyses are presented in Tables 16-18 for ASAP Reading, Math, and Writing, respectively.

**Reading ASAP and LR Scores**: Table 16 shows the ANOVA and correlational analysis results for the ASAP Reading Assessments in Grades 3, 8, and 12. Shown in this table are the names of the ASAP Reading Assessments (Column 1), correlations between the Reading LR and the Reading ASAP scores by assessment (Column 2), number of students for whom both the LR and ASAP scores are available (Column 3), summary statistics (mean and SD of the ASAP scores and subgroup sample sizes) for the LOW subgroup (Columns 4-6), AVERAGE subgroup (Columns 7-9) and HIGH subgroup (Columns 10-12), ANOVA results (Columns 13-14), and the significant pairwise subgroup differences (Column 15).

The number of examinees for whom both the LR and Reading ASAP data were available varied significantly across assessments, with much of the variability coming from Grade 12. The maximum sample size in Grade 12 was only 23 across the 9 assessments. The Grade 12 sample sizes are much too small for any meaningful and reliable interpretation of the Grade 12 data.

The sample sizes for the Grade 3 and Grade 8 assessments appear to be adequate, with most of them greater than 100. The correlations between the LR and ASAP scores vary from .09 to .41. All of these correlations are statistically significant at the .05 level, except for the correlation for Grade 8, Reading Assessment 1 (8R-1). All the ANOVA results for Grades 3 and 8 are also significant at the .05 level (Column 14), again with the exception of Assessment 8R-1. These statistically significant results in Grades 3 and 8 indicate that examinees that score high on the ASAP Reading Assessments also score high on the Reading LRs. For example, the mean Assessment 3R-1 scores for the LOW, AVERAGE, and HIGH subgroups are 15.59, 16.80, and 19.50, respectively. This shows that those who received HIGH LR scores perform better on ASAP 3R-1 than do those who received LR scores of AVERAGE or LOW.

The last column of Table 16 shows which subgroups are significantly different. Since three subgroups are involved in each ANOVA, it is important to know which subgroups are significantly different pairwise. For example, performance of the AVERAGE and HIGH subgroups (A-H) on Assessment 3R-1 is significantly different, with the HIGH subgroup doing better than the AVERAGE subgroup. As also indicated in Column 15, the HIGH subgroup does significantly better than the LOW subgroup (L-H). The difference in the mean performance of the AVERAGE and LOW subgroups is not significantly different for Assessment 3R-1 and therefore not listed in Column 15. Similar interpretations should be made for the other assessments. With the exception of Assessments 8R-1 and 8R-5, the means for the HIGH and LOW subgroups are significantly different for all assessments in Grades 3 and 8.

**Mathematics ASAP and LR Scores**: Table 14 shows the ANOVA and correlational analysis data for the Mathematics ASAP Assessments in Grades 3, 8, and 12. The format of this table is identical to the format outlined for Table 16. Again, the number of examinees with both the LR and ASAP data for the various assessments in Grade 12 is much too small to yield reliable and meaningful results. The sample sizes for Grades 3 and 8 are substantial and should provide some useful information about the criterion-related validity of the ASAP Assessments.

## TABLE 13
## CORRELATIONS ASAP TOTAL WITH *ITBS* STANDARD SCORES - GRADE 3

| | VOCABULARY | | | | READING | | | | LANGUAGE TOTAL | | | | MATH TOTAL | | | | COMPLETE COMPOSITE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assessment | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r |
| 3R-1 | 612 | 95.52 | 14.79 | .50 | 612 | 93.70 | 18.59 | .50 | 603 | 97.43 | 15.75 | .48 | 598 | 97.43 | 10.77 | .44 | 588 | 96.21 | 12.38 | 0.54 |
| 3R-2 | 543 | 94.19 | 13.87 | .49 | 545 | 90.99 | 17.51 | .50 | 537 | 97.14 | 15.69 | .53 | 540 | 96.68 | 10.60 | .44 | 525 | 95.31 | 12.41 | 0.54 |
| 3R-3 | 584 | 95.32 | 14.82 | .57 | 582 | 93.56 | 18.56 | .60 | 569 | 98.43 | 15.75 | .57 | 567 | 97.97 | 10.80 | .54 | 555 | 96.61 | 12.58 | 0.64 |
| 3R-4 | 552 | 94.74 | 14.03 | .45 | 554 | 91.65 | 17.98 | .45 | 548 | 96.54 | 15.84 | .49 | 541 | 96.99 | 10.92 | .44 | 527 | 95.35 | 12.62 | 0.54 |
| 3R-5 | 611 | 97.52 | 35.68 | .16 | 612 | 96.44 | 39.71 | .20 | 608 | 99.83 | 33.98 | .22 | 603 | 98.47 | 13.01 | .29 | 587 | 98.30 | 31.72 | 0.18 |
| 3M-1 | 531 | 94.34 | 14.89 | .24 | 534 | 91.92 | 18.57 | .27 | 525 | 96.73 | 15.84 | .28 | 524 | 96.91 | 11.71 | .35 | 509 | 96.03 | 13.46 | 0.34 |
| 3M-2 | 477 | 94.80 | 14.83 | .20 | 479 | 93.35 | 18.35 | .23 | 469 | 97.64 | 15.75 | .26 | 473 | 97.22 | 10.95 | .27 | 454 | 95.95 | 12.40 | 0.30 |
| 3M-3 | 537 | 93.80 | 14.40 | .20 | 537 | 91.35 | 16.95 | .25 | 526 | 96.26 | 14.93 | .27 | 528 | 96.22 | 10.62 | .30 | 512 | 94.58 | 12.17 | 0.32 |
| 3M-4 | 556 | 96.00 | 13.86 | .35 | 555 | 94.03 | 16.97 | .34 | 552 | 99.14 | 15.02 | .38 | 550 | 97.73 | 10.91 | .44 | 538 | 96.82 | 12.28 | 0.43 |
| 3M-5 | 544 | 94.71 | 15.96 | .35 | 545 | 92.15 | 18.02 | .37 | 534 | 97.47 | 15.89 | .42 | 536 | 96.88 | 11.27 | .45 | 516 | 95.92 | 12.70 | 0.47 |
| 3M-6 | 537 | 95.42 | 15.65 | .34 | 536 | 93.82 | 19.14 | .38 | 524 | 98.31 | 16.61 | .40 | 534 | 98.10 | 12.38 | .38 | 515 | 96.94 | 13.48 | 0.45 |
| 3M-7 | 581 | 94.68 | 13.60 | .31 | 582 | 94.04 | 30.54 | .20 | 576 | 98.31 | 20.30 | .29 | 572 | 96.76 | 11.91 | .35 | 556 | 96.56 | 21.13 | 0.25 |
| 3M-8 | 563 | 94.99 | 15.35 | .32 | 565 | 92.41 | 18.50 | .35 | 557 | 97.68 | 15.77 | .39 | 553 | 96.68 | 12.04 | .42 | 536 | 95.61 | 13.09 | 0.42 |
| 3W-1 | 583 | 95.27 | 14.30 | .39 | 584 | 93.46 | 18.06 | .42 | 579 | 98.04 | 15.53 | .50 | 576 | 97.42 | 11.26 | .33 | 569 | 96.53 | 12.78 | 0.45 |
| 3W-2 | 610 | 94.67 | 13.50 | .49 | 613 | 92.29 | 18.22 | .49 | 606 | 97.57 | 16.78 | .53 | 605 | 96.61 | 11.76 | .42 | 595 | 95.63 | 13.36 | 0.52 |
| 3W-3 | 511 | 95.90 | 14.99 | .34 | 508 | 94.57 | 18.98 | .39 | 501 | 98.47 | 15.62 | .48 | 502 | 97.48 | 11.09 | .42 | 490 | 96.61 | 12.16 | 0.47 |
| 3W-4 | 637 | 94.71 | 14.52 | .39 | 640 | 92.98 | 19.14 | .45 | 623 | 97.97 | 15.60 | .44 | 620 | 97.11 | 11.82 | .38 | 607 | 95.82 | 12.72 | 0.45 |
| 3W-5 | 571 | 94.41 | 14.65 | .40 | 572 | 92.65 | 17.97 | .39 | 565 | 97.82 | 16.78 | .47 | 564 | 96.87 | 10.66 | .38 | 549 | 95.81 | 12.72 | 0.46 |
| 1991 AZ NRT TOTALS | 49889 | 93.60 | | | 50069 | 91.00 | | | 49282 | 96.00 | | | 49360 | 96.20 | | | 47796 | 94.70 | | |

# TABLE 14
## CORRELATIONS ASAP TOTAL WITH *ITBS* STANDARD SCORES - GRADE 8

| | VOCABULARY | | | | READING | | | | LANGUAGE TOTAL | | | | MATH TOTAL | | | | COMPLETE COMPOSITE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assessment | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r |
| 8R-1 | 528 | 153.23 | 18.33 | .61 | 528 | 157.96 | 19.61 | .62 | 527 | 159.28 | 18.26 | .59 | 530 | 156.20 | 16.02 | .53 | 511 | 157.40 | 15.99 | 0.65 |
| 8R-2 | 632 | 152.23 | 19.73 | .55 | 632 | 157.53 | 19.95 | .57 | 629 | 158.65 | 19.04 | .60 | 635 | 156.76 | 16.76 | .55 | 610 | 156.96 | 16.75 | 0.65 |
| 8R-3 | 618 | 156.38 | 17.61 | .51 | 619 | 160.22 | 19.39 | .49 | 611 | 160.56 | 18.50 | .48 | 613 | 158.18 | 16.66 | .46 | 597 | 159.29 | 16.22 | 0.56 |
| 8R-4 | 590 | 153.82 | 18.94 | .55 | 591 | 158.83 | 20.40 | .53 | 585 | 158.68 | 19.30 | .55 | 585 | 156.79 | 16.65 | .50 | 573 | 157.78 | 16.81 | 0.60 |
| 8R-5 | 604 | 154.28 | 19.74 | .44 | 606 | 159.84 | 21.18 | .44 | 603 | 159.87 | 19.47 | .46 | 604 | 158.30 | 17.39 | .41 | 588 | 158.58 | 17.66 | 0.48 |
| 8R-6 | 492 | 153.30 | 17.57 | .42 | 493 | 158.12 | 20.64 | .48 | 488 | 158.58 | 18.81 | .52 | 486 | 156.22 | 15.83 | .53 | 474 | 157.11 | 16.28 | 0.55 |
| 8R-7 | 588 | 153.55 | 18.46 | .52 | 590 | 158.24 | 19.64 | .54 | 584 | 158.40 | 19.12 | .56 | 585 | 155.99 | 16.36 | .52 | 562 | 157.18 | 16.35 | 0.59 |
| 8M-1 | 519 | 152.76 | 19.40 | .57 | 519 | 158.24 | 20.41 | .55 | 513 | 158.89 | 19.16 | .56 | 515 | 155.81 | 16.28 | .56 | 506 | 156.84 | 16.77 | 0.64 |
| 8M-2 | 575 | 152.51 | 17.33 | .40 | 573 | 158.40 | 18.97 | .39 | 566 | 159.02 | 17.92 | .37 | 565 | 156.07 | 15.28 | .45 | 559 | 157.00 | 15.15 | 0.48 |
| 8M-3 | 572 | 152.38 | 19.14 | .38 | 571 | 158.68 | 20.09 | .39 | 554 | 159.71 | 18.54 | .45 | 561 | 157.11 | 16.95 | .49 | 542 | 157.62 | 16.39 | 0.49 |
| 8M-4 | 528 | 155.23 | 17.81 | .52 | 532 | 160.43 | 19.24 | .48 | 520 | 161.04 | 18.29 | .50 | 526 | 157.33 | 15.18 | .64 | 505 | 159.04 | 15.31 | 0.63 |
| 8M-5 | 527 | 153.74 | 18.24 | .39 | 530 | 159.09 | 19.63 | .41 | 526 | 160.64 | 18.34 | .41 | 523 | 156.76 | 16.53 | .50 | 503 | 158.30 | 16.36 | 0.48 |
| 8M-6 | 576 | 153.60 | 18.17 | .31 | 578 | 158.81 | 19.66 | .33 | 568 | 159.55 | 18.51 | .37 | 567 | 156.61 | 16.79 | .44 | 551 | 157.74 | 16.06 | 0.41 |
| 8M-7 | 600 | 153.72 | 18.71 | .46 | 601 | 158.23 | 19.98 | .48 | 603 | 159.34 | 19.04 | .49 | 593 | 157.25 | 15.92 | .62 | 574 | 157.83 | 16.28 | 0.61 |
| 8M-8 | 470 | 152.91 | 17.60 | .53 | 469 | 158.39 | 19.54 | .50 | 463 | 160.65 | 17.60 | .48 | 466 | 156.39 | 15.58 | .60 | 448 | 157.80 | 15.29 | 0.60 |
| 8M-9 | 522 | 157.48 | 18.63 | .46 | 523 | 157.36 | 20.89 | .49 | 521 | 157.57 | 18.63 | .51 | 519 | 155.05 | 15.95 | .64 | 501 | 156.08 | 16.07 | 0.61 |
| 8W-1 | 471 | 152.48 | 20.12 | .38 | 472 | 157.62 | 21.93 | .43 | 467 | 159.37 | 20.61 | .50 | 466 | 156.51 | 17.44 | .44 | 455 | 157.10 | 17.88 | 0.49 |
| 8W-2 | 588 | 152.35 | 19.38 | .40 | 587 | 158.16 | 20.64 | .44 | 585 | 158.34 | 19.73 | .54 | 579 | 155.47 | 16.95 | .46 | 568 | 156.74 | 17.20 | 0.51 |
| 8W-3 | 611 | 153.45 | 18.29 | .47 | 609 | 158.67 | 19.78 | .48 | 602 | 159.33 | 18.86 | .53 | 602 | 156.90 | 17.33 | .44 | 590 | 157.54 | 16.64 | 0.53 |
| 8W-4 | 619 | 153.40 | 18.17 | .39 | 623 | 157.31 | 20.13 | .49 | 616 | 158.63 | 19.59 | .51 | 614 | 156.69 | 15.81 | .47 | 596 | 157.13 | 16.49 | 0.53 |
| 8W-5 | 573 | 154.18 | 18.44 | .31 | 573 | 158.62 | 20.34 | .29 | 567 | 159.19 | 18.63 | .35 | 568 | 155.83 | 15.86 | .25 | 552 | 157.69 | 16.25 | 0.34 |
| 8W-6 | 548 | 153.39 | 20.91 | .43 | 546 | 158.72 | 22.00 | .44 | 539 | 159.26 | 19.38 | .47 | 542 | 156.84 | 16.17 | .36 | 523 | 157.76 | 16.86 | 0.49 |
| 8W-7 | 424 | 153.66 | 19.29 | .43 | 425 | 159.44 | 20.15 | .44 | 420 | 160.52 | 18.00 | .54 | 425 | 157.78 | 16.29 | .46 | 409 | 158.91 | 16.16 | 0.52 |
| 1991 AZ NRT TOTALS | 43728 | 151.70 | | | 43807 | 156.20 | | | 43319 | 156.50 | | | 43430 | 154.50 | | | 41652 | 155.50 | | |

## TABLE 15
## CORRELATIONS ASAP TOTAL WITH *TAP* STANDARD SCORES - GRADE 12

| | READING | | | | MATH | | | | WRITTEN EXPRESSION | | | | BASIC COMPOSITE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assessment | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r | Number of Cases | Mean | SD | r |
| 12R-1 | 572 | 191.16 | 27.54 | .44 | 574 | 184.12 | 24.77 | .35 | 571 | 191.26 | 26.72 | .41 | 564 | 190.46 | 23.80 | .46 |
| 12R-2 | 631 | 195.73 | 28.82 | .56 | 634 | 187.85 | 26.80 | .51 | 636 | 194.65 | 28.89 | .60 | 624 | 194.68 | 25.75 | .62 |
| 12R-3 | 692 | 190.83 | 29.87 | .63 | 699 | 183.75 | 26.98 | .52 | 695 | 191.39 | 29.32 | .59 | 679 | 190.99 | 25.89 | .66 |
| 12R-4 | 596 | 191.88 | 30.13 | .57 | 598 | 186.97 | 24.98 | .53 | 599 | 192.27 | 29.38 | .54 | 579 | 192.36 | 25.77 | .61 |
| 12R-5 | 472 | 194.47 | 26.81 | .60 | 475 | 184.73 | 24.40 | .54 | 473 | 191.99 | 25.81 | .59 | 463 | 192.35 | 22.91 | .64 |
| 12R-6 | 592 | 191.36 | 29.15 | .57 | 591 | 185.09 | 27.28 | .50 | 593 | 191.82 | 28.52 | .56 | 583 | 190.83 | 25.97 | .61 |
| 12R-7 | 654 | 194.95 | 28.45 | .63 | 653 | 187.69 | 25.41 | .52 | 655 | 194.98 | 27.62 | .62 | 644 | 194.76 | 24.68 | .66 |
| 12R-8 | 661 | 192.16 | 28.60 | .48 | 658 | 185.27 | 24.72 | .42 | 665 | 194.71 | 25.77 | .49 | 653 | 192.54 | 23.71 | .52 |
| 12R-9 | 685 | 193.12 | 29.40 | .55 | 685 | 187.67 | 25.35 | .47 | 684 | 193.74 | 28.73 | .54 | 676 | 193.31 | 25.88 | .58 |
| 12M-1 | 639 | 191.80 | 28.07 | .50 | 639 | 184.95 | 26.71 | .61 | 637 | 192.03 | 27.13 | .54 | 628 | 191.73 | 24.53 | .62 |
| 12M-2 | 744 | 193.25 | 28.75 | .57 | 748 | 187.52 | 25.41 | .69 | 751 | 193.67 | 27.88 | .57 | 742 | 193.34 | 25.08 | .68 |
| 12M-3 | 606 | 193.57 | 28.65 | .56 | 607 | 186.03 | 25.57 | .70 | 610 | 191.55 | 27.36 | .60 | 601 | 192.27 | 24.58 | .70 |
| 12M-4 | 579 | 192.41 | 29.93 | .65 | 581 | 187.47 | 27.52 | .78 | 587 | 192.87 | 28.92 | .66 | 574 | 193.05 | 26.50 | .75 |
| 12M-5 | 736 | 193.11 | 27.93 | .44 | 739 | 187.00 | 27.03 | .59 | 739 | 193.20 | 28.50 | .44 | 731 | 192.79 | 25.22 | .55 |
| 12M-6 | 357 | 193.39 | 28.50 | .58 | 356 | 185.83 | 25.90 | .59 | 358 | 193.49 | 27.54 | .56 | 356 | 192.60 | 24.70 | .65 |
| 12M-7 | 603 | 189.87 | 29.39 | .53 | 600 | 182.96 | 27.21 | .60 | 603 | 190.79 | 28.23 | .54 | 598 | 189.91 | 25.88 | .62 |
| 12M-8 | 749 | 190.91 | 27.30 | .54 | 752 | 185.68 | 25.71 | .59 | 753 | 191.26 | 26.62 | .51 | 732 | 191.28 | 24.15 | .61 |
| 12W-1 | 583 | 192.86 | 28.34 | .45 | 582 | 184.81 | 26.52 | .38 | 581 | 193.05 | 27.77 | .51 | 572 | 191.94 | 25.23 | .48 |
| 12W-2 | 573 | 192.73 | 27.00 | .44 | 576 | 184.39 | 25.20 | .38 | 577 | 194.22 | 26.90 | .46 | 561 | 192.09 | 24.06 | .50 |
| 12W-3 | 539 | 194.06 | 28.45 | .37 | 538 | 187.52 | 25.78 | .33 | 536 | 192.96 | 27.29 | .38 | 528 | 193.71 | 24.20 | .41 |
| 12W-4 | 506 | 195.76 | 29.30 | .31 | 508 | 189.58 | 26.59 | .27 | 511 | 195.28 | 28.58 | .32 | 501 | 195.52 | 26.15 | .34 |
| 12W-5 | 582 | 195.13 | 27.50 | .42 | 583 | 187.91 | 26.35 | .33 | 581 | 196.69 | 27.69 | .43 | 576 | 195.12 | 24.23 | .45 |
| 12W-6 | 493 | 196.05 | 26.58 | .32 | 496 | 187.51 | 25.32 | .35 | 494 | 194.45 | 24.99 | .43 | 482 | 194.51 | 23.01 | .43 |
| 12W-7 | 669 | 191.54 | 28.51 | .41 | 666 | 184.12 | 24.71 | .35 | 669 | 190.91 | 27.30 | .43 | 655 | 190.80 | 24.04 | .45 |
| 12W-8 | 549 | 195.66 | 26.93 | .40 | 554 | 186.85 | 26.54 | .38 | 550 | 194.52 | 26.68 | .46 | 542 | 194.10 | 24.27 | .46 |
| 12W-9 | 604 | 194.68 | 26.21 | .39 | 604 | 187.31 | 24.34 | .38 | 600 | 194.99 | 24.87 | .44 | 590 | 193.92 | 22.70 | .46 |
| 1991 AZ NRT TOTALS | 30409 | 188.40 | | | 30421 | 181.90 | | | 30384 | 188.20 | | | 29480 | 188.10 | | |

The correlations between the Mathematics LR and ASAP scores vary from a minimum of .08 for 3M-3 to a maximum of .63 for 8M-7. All these correlations are statistically significant with the exceptions of the correlations for Assessments 3M-2 and 3M-3. The significance of the F-ratios given in Column 14 also confirms this finding. The significant F-ratios imply that the three subgroups performed significantly differently on the Mathematics ASAP assessments. As noted in the last column of Table 14, those with HIGH scores did significantly better than those with LOW scores on most of the Mathematics ASAP Assessments in Grades 3 and 8. For many of these assessments, the same could be concluded for the HIGH versus AVERAGE scores.

**Writing ASAP and Language LR Scores**: Table 15 shows the ANOVA and correlational analysis results for the ASAP Writing Assessments in Grades 3, 8, and 12. It should be noted that the LR data used in this analysis are for language. The format of this table is identical to the format outlined for Table 16. Again, the number of examinees with both the LR and ASAP data for the various assessments in Grade 12 is much too small to yield reliable interpretation. The sample sizes for Grades 3 and 8 are, however, substantial (greater than 100 examinees) and should provide some useful information about the criterion-related validity of Writing ASAP Assessments.

The correlations between the Language LR and Writing ASAP scores vary from a minimum of .16 for 8W-6 to a maximum of .51 for 3W-1. All these correlations are statistically significant with the exception of the correlation for 8W-6. The significance of the F-ratios given in Column 14 also confirms this finding. As before, the significant F-ratios imply that the three subgroups differed significantly on the Writing ASAP Assessments. As noted in the last column of Table 14, the HIGH scorers did significantly better than the LOW scorers on most of the Writing ASAP Assessments in Grades 3 and 8. On some of these assessments, the HIGH and AVERAGE scorers also performed better than the AVERAGE scorers and LOW scorers, respectively. On Assessment 3W-1, for example, the respective means for the LOW, AVERAGE, and HIGH subgroups are 4.18, 4.77, and 6.06. The mean for the HIGH subgroup differs significantly from the means for the AVERAGE and LOW subgroups.

## Construct Validity

According to the APA et al. (1985) standards, construct validation refers to evidence that supports a construct interpretation of scores based on theoretical implications associated with the construct. It may be assessed by a measure of correlation between an observed measure and the underlying construct of interest. To accomplish this, an analysis of the structure underlying each of the 67 ASAP Assessments was undertaken, and it consisted of two parts: item analysis and factor analysis. Results from this analysis, which were based on the validity sample described earlier, are summarized in the next two sections.

**Item Analysis**: A traditional item analysis was performed for each of the 67 ASAP Assessments, resulting in the following statistics: item correlations, item mean, item SD, total (Assessment) mean, total SD, item-total correlation, and alpha reliability. The total Mean, total SD, and alpha reliability data for the 67 ASAP Assessments are presented in Table 19, separately by grade. Also shown in this table are the number of items, maximum possible score, sample size, and the total mean score expressed as a percent of the maximum possible score. (For the convenience of the readers, the information about item means, SDs, and item-total correlations is given in Appendix B separately by assessment.) Prior to evaluating the data in this table, it should be noted that similar statistics are also presented in Tables 3-11. The difference between these two sets of data is that the data in Tables 3-11 was based on small samples, which were specially selected for generalizability (or scorer bias) analysis, whereas the statistics in Table 19, were based on data from the larger validity sample.

## TABLE 16
## CRITERION-RELATED VALIDITY
## CORRELATIONS BETWEEN ASAP READING TOTAL & LOCAL RATING READING DATA

| | CORRELATION BETWEEN ASAP TOTAL & LR READING | | MEAN ASAP TOTAL BY LOCAL RATING CLASSIFICATIONS | | | | | | | | | F TEST | | GROUPS SIGNIFICANTLY DIFFERENT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LOW (L) | | | AVERAGE (A) | | | HIGH (H) | | | | | | |
| Assessment | r | Number of Cases | Mean | SD | Number of Cases | Mean | SD | Number of Cases | Mean | SD | Number of Cases | F Ratio | F Prob | (alpha = .05) | |
| 3R-1 | .33 | 145 | 15.59 | 4.91 | 29 | 16.80 | 5.14 | 56 | 19.50 | 3.64 | 60 | 9.01 | 000 | A H | L H |
| 3R-2 | .37 | 152 | 13.03 | 4.57 | 34 | 15.85 | 3.75 | 75 | 17.30 | 3.26 | 43 | 12.12 | 000 | L A | L H |
| 3R-3 | .36 | 168 | 13.36 | 5.39 | 25 | 16.50 | 3.93 | 56 | 17.84 | 3.31 | 87 | 13.06 | 000 | L A | L H |
| 3R-4 | .26 | 108 | 16.33 | 3.00 | 9 | 18.50 | 4.44 | 36 | 19.56 | 2.58 | 63 | 4.11 | 019 | | L H |
| 3R-5 | .25 | 151 | 13.37 | 3.04 | 27 | 14.20 | 2.04 | 80 | 15.25 | 2.82 | 44 | 5.14 | 007 | | L H |
| 8R-1 | .09 | 67 | 13.48 | 2.84 | 21 | 13.97 | 2.80 | 30 | 14.13 | 2.83 | 16 | 0.29 | 752 | | |
| 8R-2 | .38 | 155 | 13.96 | 5.12 | 28 | 15.61 | 3.86 | 64 | 18.08 | 2.99 | 63 | 13.23 | 000 | A H | L H |
| 8R-3 | .40 | 185 | 20.49 | 3.44 | 43 | 22.65 | 3.11 | 60 | 23.88 | 2.66 | 82 | 17.98 | 000 | | L H |
| 8R-4 | .21 | 152 | 13.85 | 3.45 | 26 | 15.83 | 2.98 | 47 | 16.27 | 4.12 | 79 | 4.24 | 016 | | L H |
| 8R-5 | .26 | 108 | 17.88 | 2.90 | 16 | 18.34 | 2.29 | 38 | 19.69 | 2.89 | 54 | 4.24 | 017 | | |
| 8R-6 | .33 | 99 | 11.87 | 3.96 | 30 | 12.21 | 3.53 | 38 | 15.03 | 3.13 | 31 | 7.55 | 001 | A H | L H |
| 8R-7 | .41 | 118 | 19.52 | 4.63 | 25 | 22.44 | 3.48 | 41 | 24.02 | 3.53 | 52 | 12.05 | 000 | L A | L H |
| 12R-1 | . | 1 | . | . | . | . | . | . | . | . | . | . | . | | |
| 12R-2 | 25 | 14 | 17.00 | 7.07 | 2 | 18.43 | 4.28 | 7 | 19.80 | 2.39 | 5 | 0.37 | 698 | | |
| 12R-3 | . | 0 | . | . | . | . | . | . | . | . | . | . | . | | |
| 12R-4 | 50 | 3 | . | . | 0 | 21.00 | . | 1 | 21.50 | 0.71 | 2 | 0.33 | 667 | | |
| 12R-5 | 75 | 20 | 7.00 | 3.81 | 5 | 12.67 | 3.77 | 9 | 17.33 | 3.14 | 6 | 11.18 | 001 | L A | L H |
| 12R-6 | . | 0 | . | . | . | . | . | . | . | . | . | . | . | | |
| 12R-7 | 71 | 23 | 5.33 | 4.51 | 3 | 10.54 | 2.70 | 13 | 16.14 | 4.81 | 7 | 10.38 | 001 | A H | L H |
| 12R-8 | . | 2 | . | . | . | . | . | . | . | . | . | . | . | | |
| 12R-9 | 55 | 13 | 4.86 | 1.86 | 7 | 6.67 | 0.82 | 6 | 5.69 | 1.70 | 13 | 4.81 | 051 | | |

## TABLE 17
## CRITERION-RELATED VALIDITY
## . CORRELATIONS BETWEEN ASAP MATHEMATICS TOTAL & LOCAL RATING MATHEMATICS DATA

| | CORRELATION BETWEEN ASAP TOTAL & LR MATHEMATICS | | MEAN ASAP TOTAL BY LOCAL RATING CLASSIFICATIONS | | | | | | | | | F TEST | | GROUPS SIGNIFICANTLY DIFFERENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LOW (L) | | | AVERAGE (A) | | | HIGH (H) | | | | | |
| Assessment | r | Number of Cases | Mean | SD | Number of Cases | Mean | SD | Number of Cases | Mean | SD | Number of Cases | F Ratio | F Prob | (alpha = .05) |
| 3M-1 | .22 | 112 | 14.81 | 2.40 | 16 | 15.07 | 2.88 | 56 | 16.30 | 2.39 | 40 | 3.09 | 049 | |
| 3M-2 | .17 | 86 | 14.90 | 5.76 | 10 | 15.58 | 4.77 | 36 | 16.98 | 4.28 | 40 | 1.25 | 293 | |
| 3M-3 | .08 | 95 | 13.07 | 2.52 | 15 | 13.45 | 2.10 | 23 | 13.54 | 2.15 | 57 | 0.30 | 744 | |
| 3M-4 | .28 | 109 | 20.54 | 5.15 | 24 | 21.74 | 2.47 | 34 | 22.94 | 2.62 | 51 | 4.52 | 013 | L H |
| 3M-5 | .31 | 90 | 20.11 | 4.34 | 19 | 19.81 | 3.92 | 26 | 22.51 | 2.58 | 45 | 6.44 | 003 | A H L H |
| 3M-6 | .32 | 117 | 11.27 | 5.05 | 22 | 13.90 | 3.80 | 39 | 14.96 | 3.44 | 56 | 7.08 | 001 | L A L H |
| 3M-7 | .44 | 107 | 19.68 | 2.95 | 22 | 22.22 | 3.12 | 36 | 23.16 | 1.91 | 49 | 13.75 | 000 | L A L H |
| 3M-8 | .38 | 97 | 18.06 | 5.52 | 16 | 22.57 | 3.76 | 37 | 23.55 | 4.03 | 44 | 10.11 | 000 | L A L H |
| 8M-1 | .35 | 94 | 14.50 | 3.46 | 26 | 15.47 | 3.44 | 36 | 17.81 | 3.67 | 32 | 6.99 | 002 | A H L H |
| 8M-2 | .24 | 136 | 7.77 | 3.50 | 31 | 7.60 | 3.98 | 48 | 9.84 | 3.72 | 57 | 5.52 | 005 | A H |
| 8M-3 | .32 | 124 | 16.27 | 5.08 | 30 | 16.52 | 6.59 | 50 | 20.66 | 3.38 | 44 | 9.16 | 000 | A H L H |
| 8M-4 | .36 | 109 | 10.15 | 5.63 | 20 | 12.70 | 6.23 | 44 | 16.22 | 5.95 | 45 | 8.05 | 001 | A H L H |
| 8M-5 | .55 | 102 | 6.24 | 3.20 | 33 | 8.10 | 3.20 | 31 | 11.26 | 3.35 | 38 | 21.69 | 000 | A H L H |
| 8M-6 | .51 | 113 | 5.56 | 4.05 | 36 | 7.71 | 5.05 | 42 | 13.03 | 5.62 | 35 | 21.52 | 000 | A H L H |
| 8M-7 | .63 | 108 | 5.97 | 4.48 | 32 | 11.13 | 5.58 | 23 | 15.21 | 5.09 | 53 | 33.79 | 000 | A H L H L A |
| 8M-8 | .37 | 66 | 10.29 | 4.38 | 14 | 11.00 | 4.56 | 25 | 14.11 | 3.23 | 27 | 5.73 | 005 | A H L H |
| 8M-9 | .52 | 83 | 4.59 | 4.06 | 17 | 5.71 | 4.91 | 28 | 10.97 | 4.18 | 38 | 17.43 | 000 | A H L H |
| 12M-1 | .16 | 33 | 6.11 | 3.48 | 9 | 7.55 | 4.67 | 22 | 8.50 | 9.19 | 2 | 0.39 | 680 | |
| 12M-2 | | 0 | | | | | | | | | | | | |
| 12M-3 | .13 | 16 | 17.75 | 7.14 | 4 | 18.22 | 3.70 | 9 | 15.33 | 10.69 | 3 | 0.25 | 782 | |
| 12M-4 | .43 | 20 | 9.00 | 8.94 | 5 | 14.80 | 7.47 | 10 | 17.80 | 2.49 | 5 | 2.04 | 160 | |
| 12M-5 | | 0 | | | | | | | | | | | | |
| 12M-6 | | 0 | | | | | | | | | | | | |
| 12M-7 | | 4 | | | | | | | | | | | | |
| 12M-8 | .46 | 20 | 4.80 | 4.42 | 10 | 4.67 | 1.15 | 3 | 10.14 | 6.09 | 7 | 2.79 | 090 | |

## TABLE 18
## CRITERION-RELATED VALIDITY
## CORRELATIONS BETWEEN ASAP WRITING TOTAL & LOCAL RATING LANGUAGE DATA

| | CORRELATION BETWEEN ASAP TOTAL & LR LANGUAGE | | MEAN ASAP TOTAL BY LOCAL RATING CLASSIFICATIONS | | | | | | | | | F TEST | | GROUPS SIGNIFICANTLY DIFFERENT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LOW (L) | | | AVERAGE (A) | | | HIGH (H) | | | | | | |
| Assessment | r | Number of Cases | Mean | SD | Number of Cases | Mean | SD | Number of Cases | Mean | SD | Number of Cases | F Ratio | F Prob | (alpha = .05) | |
| 3W-1 | .51 | 163 | 4.18 | 1.20 | 40 | 4.77 | 1.35 | 52 | 6.06 | 1.35 | 71 | 29.97 | 000 | A-H | L-H |
| 3W-2 | .47 | 134 | 3.78 | 1.31 | 32 | 5.44 | 1.43 | 63 | 5.95 | 1.50 | 39 | 22.09 | 000 | L A | L H |
| 3W-3 | .40 | 123 | 4.48 | 1.86 | 29 | 5.98 | 1.45 | 57 | 6.41 | 1.48 | 37 | 13.41 | 000 | L A | L H |
| 3W-4 | .36 | 155 | 4.04 | 1.51 | 26 | 5.23 | 1.73 | 70 | 5.85 | 1.39 | 59 | 12.00 | 000 | L A | L H |
| 3W-5 | .42 | 105 | 4.08 | 1.69 | 24 | 5.60 | 1.58 | 48 | 6.09 | 1.31 | 33 | 12.72 | 000 | L A | L H |
| 8W-1 | .22 | 171 | 4.60 | 1.48 | 35 | 5.22 | 1.72 | 67 | 5.61 | 1.72 | 69 | 4.23 | 016 | | L H |
| 8W-2 | .33 | 124 | 4.90 | 1.66 | 40 | 5.54 | 1.33 | 46 | 6.21 | 1.55 | 38 | 7.35 | 001 | | L H |
| 8W-3 | .38 | 165 | 4.47 | 1.57 | 38 | 4.93 | 1.48 | 67 | 5.97 | 1.30 | 60 | 14.55 | 000 | A H | L H |
| 8W-4 | .17 | 142 | 4.69 | 1.03 | 32 | 5.85 | 1.62 | 55 | 5.49 | 1.29 | 55 | 7.31 | 001 | L A | L H |
| 8W-5 | .26 | 111 | 4.80 | 1.83 | 30 | 5.55 | 1.26 | 49 | 5.97 | 1.93 | 32 | 4.08 | 020 | | L H |
| 8W-6 | .16 | 103 | 4.82 | 1.97 | 22 | 5.12 | 1.38 | 50 | 5.52 | 1.73 | 31 | 1.24 | 294 | | |
| 8W-7 | .34 | 131 | 4.88 | 1.56 | 33 | 5.37 | 1.64 | 59 | 6.36 | 1.42 | 39 | 8.71 | 000 | A H | L H |
| 12W-1 | . | 0 | . | . | . | . | . | . | . | . | . | . | . | | |
| 12W-2 | .24 | 4 | . | . | 0 | 5.50 | 3.54 | 2 | 6.50 | 2.12 | 2 | 0.12 | 764 | | |
| 12W-3 | .22 | 34 | 4.00 | . | 1 | 4.94 | 2.37 | 31 | 7.00 | 1.41 | 2 | 0.83 | 445 | | |
| 12W-4 | . | 0 | . | . | . | . | . | . | . | . | . | . | . | | |
| 12W-5 | . | 0 | . | . | . | . | . | . | . | . | . | . | . | | |
| 12W-6 | . | 0 | . | . | . | . | . | . | . | . | . | . | . | | |
| 12W-7 | . | 0 | . | . | . | . | . | . | . | . | . | . | . | | |
| 12W-8 | . | 0 | . | . | . | . | . | . | . | . | . | . | . | | |
| 12W-9 | . | 0 | . | . | . | . | . | . | . | . | . | . | . | | |

In Grade 3, the mean percent scores vary between 62 and 89, with the percents being smaller for the Writing Assessments than for the Reading and Mathematics Assessments. The alpha reliabilities range from .50 to .86. In Grade 8, the mean percent scores vary from a minimum of 42 to a maximum of 76. The mean percent scores are mostly in the 60s for Reading and Writing, but somewhat lower for mathematics. The alpha reliabilities range from .47 to .87. The Grade 8 alpha reliabilities are generally higher than the Grade 3 alpha reliabilities. In Grade 12, the mean percent scores vary from 32 to 80, with Math having more of the lower percent scores. The alpha reliabilities, which range from .56 to .87, are typically higher than those reported for Grades 3 and 8. Finally, a comparison of the alpha reliabilities in this table with those given in Tables 3-11 shows that they are about the same with some minor exceptions.

If the purpose of the Pilot Study were to gather information about the Form A Assessments for use in revising them for a final operational edition, one would use the item correlations and other data from the item analysis to refine, modify, or delete items. The analyses presented in this Technical Report, however, are summative in nature. There is little precedence for performance assessment data of this kind. In general, the item correlations appear to be somewhat lower than one would expect from a well-developed multiple 1=1 choice test. Still, they tend to be positively correlated, indicating positive construct relationships.

**Factor Analysis**: Using the item-intercorrelation matrices for the 67 ASAP Assessments presented in Appendix B, a principal axis factor analysis was performed for each assessment. The resulting eigenvalues (only those eigenvalues greater than one) are shown in Tables 20-22 for Grades 3, 8, and 12, respectively.

**Factor Analysis of Grade 3 Assessments**: The eigenvalues for Grade 3 are presented in Table 20, separately by assessment and along with the percent of total variance accounted for by each eigenvalue. Of the 18 ASAP Assessments in this grade, there are only four assessments (3M-3, 3M-4, 3M-5, and 3M-7) for which the highest eigenvalue did not account for 20 percent of the total variance, a criterion typically used in item response theory to assess unidimensionality (Reckase, 1979). In light of this information, it may be said that most of the assessments in Grade 3 are unidimensional, with each assessment measuring a related group of skills. Of the four assessments that did not meet Reckase's minimum criterion, three assessments missed it by a small amount. According to the scree test (Tatsouka, 1988), plots of the eigenvalues (see Appendix C) tend to confirm the multidimensional nature of these assessments. That these four are all mathematics assessments is not surprising, given the reliance on reading and writing skills required by the nature of mathematics performance assessments. One would expect a larger effect of these "off-skill" requirements for students at an early stage of their development.

Finally, it should be noted that in all Writing Assessments the highest eigenvalue accounts for almost 75 percent of the total variance. This is an expected result in view of the fact that each Writing Assessment consisted of only two prompts.

**Factor Analysis of Grade 8 Assessments**: The eigenvalues for Grade 8 are presented in Table 21, separately for each of the 23 assessments, along with the percent of total variance accounted for by each eigenvalue. Only four assessments (8R-3, 8R-5, 8R-7, and 8M-1) did not meet Reckase's (1979) minimum criterion for unidimensionality. As with the similar "maverick" assessments for Grade 3, the scree plots tend to confirm the lack of a clear single factor. However, most of the assessments in Grade 8 are unidimensional, with each assessment measuring a unitary skill. As expected, the Writing Assessments provide strong evidence of unidimensionality.

## TABLE 19
## SUMMARY STATISTICS AND RELIABILITY DATA FOR ASAP TOTAL: VALIDITY SAMPLE

| Assessment | | GRADE 3 | | | | | | | GRADE 8 | | | | | | | GRADE 12 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number of Items | Max Score | Number of Cases | Mean | SD | Alpha | Mean * % Score | Number of Items | Max Score | Number of Cases | Mean | SD | Alpha | Mean * % Score | Number of Items | Max Score | Number of Cases | Mean | SD | Alpha | Mean * % Score |
| READING | 1 | 17 | 24 | 614 | 17.45 | 4.76 | .81 | 73 | 14 | 21 | 537 | 13.85 | 3.48 | .73 | 66 | 10 | 19 | 576 | 11.56 | 2.81 | .58 | 61 |
| | 2 | 9 | 24 | 552 | 15.61 | 4.24 | .71 | 65 | 12 | 26 | 646 | 16.01 | 4.26 | .64 | 62 | 22 | 25 | 644 | 17.63 | 4.25 | .76 | 71 |
| | 3 | 18 | 21 | 585 | 16.24 | 4.39 | .86 | 77 | 17 | 30 | 627 | 22.81 | 3.41 | .61 | 76 | 22 | 37 | 708 | 29.58 | 4.25 | .68 | 80 |
| | 4 | 18 | 24 | 559 | 18.39 | 3.39 | .74 | 77 | 12 | 23 | 598 | 15.26 | 3.74 | .75 | 66 | 29 | 32 | 608 | 21.75 | 3.69 | .68 | 68 |
| | 5 | 9 | 18 | 614 | 14.36 | 2.32 | .50 | 80 | 16 | 28 | 615 | 18.56 | 3.16 | .47 | 66 | 12 | 23 | 479 | 11.83 | 4.43 | .70 | 51 |
| | 6 | | | | | | | | 8 | 23 | 496 | 11.88 | 4.19 | .70 | 52 | 9 | 23 | 599 | 10.81 | 4.40 | .70 | 47 |
| | 7 | | | | | | | | 18 | 32 | 599 | 22.51 | 4.06 | .71 | 70 | 17 | 24 | 661 | 15.00 | 4.00 | .70 | 63 |
| | 8 | | | | | | | | | | | | | | | 16 | 37 | 670 | 25.50 | 4.44 | .56 | 69 |
| | 9 | | | | | | | | | | | | | | | 5 | 9 | 693 | 6.06 | 2.14 | .66 | 67 |
| MATHEMATICS | 1 | 12 | 20 | 539 | 15.42 | 2.96 | .68 | 77 | 18 | 24 | 523 | 15.85 | 3.75 | .67 | 66 | 10 | 20 | 647 | 7.66 | 4.45 | .73 | 38 |
| | 2 | 21 | 26 | 484 | 15.99 | 4.36 | .79 | 62 | 13 | 16 | 578 | 8.69 | 3.57 | .73 | 54 | 11 | 22 | 763 | 11.11 | 4.69 | .73 | 51 |
| | 3 | 15 | 17 | 540 | 13.22 | 2.49 | .59 | 78 | 11 | 27 | 579 | 17.30 | 6.12 | .77 | 64 | 16 | 29 | 614 | 17.82 | 6.47 | .84 | 61 |
| | 4 | 21 | 26 | 559 | 21.80 | 3.02 | .67 | 84 | 18 | 28 | 538 | 13.14 | 6.40 | .83 | 47 | 14 | 26 | 593 | 12.33 | 7.33 | .87 | 47 |
| | 5 | 24 | 29 | 549 | 21.46 | 3.59 | .68 | 74 | 11 | 19 | 540 | 8.03 | 4.04 | .69 | 42 | 16 | 28 | 747 | 15.40 | 5.57 | .75 | 55 |
| | 6 | 12 | 18 | 545 | 13.46 | 3.79 | .78 | 75 | 16 | 24 | 583 | 10.61 | 6.93 | .87 | 44 | 13 | 25 | 360 | 13.08 | 4.62 | .71 | 52 |
| | 7 | 13 | 25 | 587 | 22.36 | 2.65 | .50 | 89 | 13 | 23 | 612 | 10.72 | 6.35 | .80 | 47 | 13 | 22 | 610 | 7.86 | 5.55 | .87 | 36 |
| | 8 | 17 | 29 | 573 | 22.19 | 4.65 | .79 | 77 | 14 | 22 | 478 | 11.15 | 4.26 | .65 | 51 | 18 | 29 | 765 | 9.19 | 6.66 | .86 | 32 |
| | 9 | | | | | | | | 10 | 16 | 533 | 6.67 | 4.38 | .81 | 42 | | | | | | | |
| WRITING | 1 | 2 | 8 | 588 | 5.08 | 1.72 | .69 | 64 | 2 | 8 | 478 | 5.29 | 1.68 | .73 | 66 | 2 | 8 | 590 | 5.22 | 1.59 | .70 | 65 |
| | 2 | 2 | 8 | 620 | 4.98 | 1.64 | .71 | 62 | 2 | 8 | 591 | 5.41 | 1.72 | .67 | 68 | 2 | 8 | 584 | 5.43 | 1.85 | .81 | 68 |
| | 3 | 2 | 8 | 513 | 5.73 | 1.67 | .68 | 72 | 2 | 8 | 616 | 5.21 | 1.64 | .80 | 65 | 2 | 8 | 542 | 5.17 | 1.93 | .83 | 65 |
| | 4 | 2 | 8 | 644 | 5.17 | 1.67 | .63 | 65 | 2 | 8 | 634 | 5.14 | 1.69 | .70 | 64 | 2 | 8 | 521 | 5.79 | 1.86 | .83 | 72 |
| | 5 | 2 | 8 | 579 | 5.42 | 1.60 | .64 | 68 | 2 | 8 | 580 | 5.76 | 1.46 | .71 | 72 | 2 | 8 | 588 | 6.11 | 1.57 | .80 | 76 |
| | 6 | | | | | | | | 2 | 8 | 558 | 5.04 | 1.55 | .82 | 63 | 2 | 8 | 500 | 5.69 | 1.83 | .84 | 71 |
| | 7 | | | | | | | | 2 | 8 | 433 | 5.53 | 1.62 | .73 | 69 | 2 | 8 | 679 | 5.66 | 1.83 | .82 | 71 |
| | 8 | | | | | | | | | | | | | | | 2 | 8 | 554 | 5.42 | 1.69 | .68 | 68 |
| | 9 | | | | | | | | | | | | | | | 2 | 8 | 611 | 5.62 | 1.79 | .74 | 70 |

*Mean score expressed as a percent of maximum possible score

## TABLE 20
## FACTOR ANALYSIS OUTPUT FOR GRADE 3

| READING | 3R-1 | | 3R-2 | | 3R-3 | | 3R-4 | | 3R-5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Factor | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance |
| 1 | 5.35 | 31.5 | 2.93 | 32.6 | 5.93 | 33.0 | 4.34 | 24.1 | 2.51 | 27.9 |
| 2 | 2.14 | 12.6 | 1.17 | 13.0 | 1.57 | 8.7 | 1.67 | 9.3 | 1.35 | 15.1 |
| 3 | 1.19 | 7.0 | | | 1.44 | 8.0 | 1.33 | 7.4 | 1.03 | 11.4 |
| 4 | | | | | 1.07 | 6.0 | 1.06 | 5.9 | | |
| 5 | | | | | | | 1.02 | 5.7 | | |
| COLUMN TOTAL | 8.68 | 51.1 | 4.1 | 45.6 | 10.01 | 55.7 | 9.42 | 52.4 | 4.89 | 54.4 |
| EIGENVALUES > 1 | 3 | | 2 | | 4 | | 5 | | 3 | |

| MATH | 3M-1 | | 3M-2 | | 3M-3* | | 3M-4 | | 3M-5 | | 3M-6 | | 3M-7 | | 3M-8 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance |
| 1 | 3.34 | 27.9 | 7.29 | 34.7 | 2.75 | 19.7 | 4.18 | 19.9 | 3.43 | 14.3 | 4.28 | 35.6 | 2.41 | 18.5 | 4.33 | 25.5 |
| 2 | 1.93 | 16.1 | 3.41 | 16.2 | 2.30 | 16.4 | 2.37 | 11.3 | 2.24 | 9.3 | 1.45 | 12.1 | 1.58 | 12.2 | 2.14 | 12.6 |
| 3 | 1.27 | 10.6 | 2.24 | 10.7 | 1.31 | 9.4 | 1.66 | 7.9 | 1.77 | 7.4 | 1.42 | 11.8 | 1.23 | 9.4 | 1.26 | 7.4 |
| 4 | 1.00 | 8.3 | 1.62 | 7.7 | 1.02 | 7.3 | 1.55 | 7.4 | 1.53 | 6.4 | | | 1.11 | 8.6 | 1.15 | 6.8 |
| 5 | | | | | | | 1.27 | 6.1 | 1.35 | 5.6 | | | 1.01 | 7.8 | 1.10 | 6.5 |
| 6 | | | | | | | 1.17 | 5.6 | 1.15 | 4.8 | | | | | | |
| 7 | | | | | | | 1.12 | 5.4 | 1.14 | 4.8 | | | | | | |
| 8 | | | | | | | 1.06 | 5.1 | 1.09 | 4.5 | | | | | | |
| 9 | | | | | | | 1.01 | 4.8 | 1.00 | 4.2 | | | | | | |
| COLUMN TOTAL | 7.54 | 62.9 | 14.56 | 69.3 | | | 15.39 | 73.5 | 14.70 | 61.3 | 7.15 | 59.5 | 7.34 | 56.5 | 9.98 | 58.8 |
| EIGENVALUES > 1 | 4 | | 4 | | | | 9 | | 9 | | 3 | | 5 | | 5 | |

*Observation Number 1 was omitted due to zero variance

| WRITING | 3W-1 | | 3W-2 | | 3W-3 | | 3W-4 | | 3W-5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Factor | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance | Eigen value | % Total Variance |
| 1 | 1.54 | 76.9 | 1.57 | 78.4 | 1.53 | 76.4 | 1.49 | 74.6 | 1.49 | 74.7 |
| COLUMN TOTAL | 1.54 | 76.9 | 1.57 | 78.4 | 1.53 | 76.4 | 1.49 | 74.6 | 1.49 | 74.7 |
| EIGENVALUES > 1 | 1 | | 1 | | 1 | | 1 | | 1 | |

## TABLE 21
## FACTOR ANALYSIS OUTPUT FOR GRADE 8

| READING | 8R-1 | | 8R-2 | | 8R-3 | | 8R-4 | | 8R-5 | | 8R-6 | | 8R-7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance |
| 1 | 3.69 | 26.3 | 2.85 | 23.7 | 3.06 | 18.0 | 3.35 | 27.9 | 2.26 | 14.2 | 2.81 | 35.1 | 3.25 | 18.0 |
| 2 | 1.65 | 11.8 | 1.24 | 10.3 | 1.45 | 8.5 | 1.63 | 13.6 | 1.31 | 8.2 | 1.06 | 13.3 | 1.37 | 7.6 |
| 3 | 1.30 | 9.3 | 1.01 | 8.4 | 1.26 | 7.4 | 1.04 | 8.7 | 1.22 | 7.6 | | | 1.23 | 6.8 |
| 4 | 1.12 | 8.0 | | | 1.23 | 7.2 | | | 1.20 | 7.5 | | | 1.11 | 6.1 |
| 5 | | | | | 1.11 | 6.6 | | | 1.12 | 7.0 | | | 1.05 | 5.8 |
| 6 | | | | | 1.07 | 6.3 | | | 1.09 | 6.8 | | | 1.03 | 5.7 |
| COLUMN TOTAL | 7.76 | 55.4 | 5.10 | 42.4 | 9.18 | 54.0 | 6.02 | 50.2 | 8.20 | 51.3 | 3.87 | 48.4 | 9.04 | 50.0 |
| EIGENVALUES > 1 | 4 | | 3 | | 6 | | 3 | | 6 | | 2 | | 6 | |

| MATH | 8M-1 | | 8M-2 | | 8M-3 | | 8M-4 | | 8M-5 | | 8M-6 | | 8M-7 | | 8M-8 | | 8M-9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance |
| 1 | 3.22 | 17.9 | 3.62 | 27.9 | 3.52 | 32.0 | 4.94 | 27.5 | 2.93 | 26.6 | 6.37 | 39.8 | 4.34 | 33.4 | 2.84 | 20.3 | 3.87 | 38.7 |
| 2 | 1.88 | 10.4 | 1.39 | 10.7 | 1.58 | 14.4 | 1.46 | 8.1 | 1.18 | 10.8 | 1.31 | 8.2 | 1.33 | 10.3 | 1.33 | 9.5 | 1.40 | 14.0 |
| 3 | 1.30 | 7.2 | 1.34 | 10.3 | 1.32 | 12.0 | 1.30 | 7.2 | 1.03 | 9.4 | 1.14 | 7.1 | 1.18 | 9.1 | 1.20 | 8.5 | | |
| 4 | 1.19 | 6.6 | 1.12 | 8.6 | 1.17 | 10.6 | 1.20 | 6.7 | | | 1.05 | 6.5 | 1.06 | 8.1 | 1.03 | 7.3 | | |
| 5 | 1.05 | 5.8 | | | | | 1.01 | 5.6 | | | | | | | 1.02 | 7.3 | | |
| COLUMN TOTAL | 8.64 | 47.9 | 7.47 | 57.5 | 7.59 | 69.0 | 9.91 | 55.1 | 5.14 | 46.8 | 9.87 | 61.6 | 7.91 | 60.9 | 7.42 | 52.9 | 5.27 | 52.7 |
| EIGENVALUES > 1 | 5 | | 4 | | 4 | | 5 | | 3 | | 4 | | 4 | | 5 | | 2 | |

| WRITING | 8W-1 | | 8W-2 | | 8W-3 | | 8W-4 | | 8W-5 | | 8W-6 | | 8W-7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance |
| 1 | 1.58 | 78.9 | 1.51 | 75.6 | 1.67 | 83.4 | 1.54 | 76.9 | 1.56 | 77.8 | 1.69 | 84.7 | 1.58 | 79.1 |
| COLUMN TOTAL | 1.58 | 78.9 | 1.51 | 75.6 | 1.67 | 83.4 | 1.54 | 76.9 | 1.56 | 77.8 | 1.69 | 84.7 | 1.58 | 79.1 |
| EIGENVALUES > 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | |

## TABLE 22
## FACTOR ANALYSIS OUTPUT FOR GRADE 12

| READING | 12R-1 | | 12R-2 | | 12R-3 | | 12R-4 | | 12R-5 | | 12R-6 | | 12R-7 | | 12R-8 | | 12R-9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance |
| 1 | 2.52 | 25.2 | 4.32 | 19.6 | 3.42 | 15.6 | 3.67 | 12.6 | 3.18 | 26.5 | 2.81 | 31.2 | 3.22 | 19.0 | 2.78 | 17.4 | 2.17 | 43.4 |
| 2 | 1.17 | 11.7 | 1.88 | 8.5 | 1.60 | 7.3 | 1.82 | 6.3 | 1.34 | 11.1 | 1.11 | 12.4 | 1.63 | 9.6 | 1.79 | 11.2 | | |
| 3 | 1.03 | 10.3 | 1.52 | 6.9 | 1.27 | 5.8 | 1.62 | 5.6 | 1.08 | 9.0 | | | 1.28 | 7.5 | 1.31 | 8.2 | | |
| 4 | | | 1.21 | 5.5 | 1.22 | 5.5 | 1.48 | 5.1 | 1.01 | 8.4 | | | 1.17 | 6.9 | 1.13 | 7.1 | | |
| 5 | | | 1.07 | 4.9 | 1.18 | 5.4 | 1.44 | 5.0 | | | | | 1.02 | 6.0 | 1.05 | 6.6 | | |
| 6 | | | | | 1.10 | 5.0 | 1.17 | 4.0 | | | | | | | | | | |
| 7 | | | | | 1.03 | 4.7 | 1.10 | 3.8 | | | | | | | | | | |
| 8 | | | | | | | 1.06 | 3.7 | | | | | | | | | | |
| 9 | | | | | | | 1.03 | 3.6 | | | | | | | | | | |
| COLUMN TOTAL | 4.72 | 47.2 | 10.00 | 45.4 | 10.82 | 49.3 | 14.39 | 49.7 | 6.61 | 55.0 | 3.92 | 43.6 | 8.32 | 49.0 | 8.06 | 50.5 | 2.17 | 43.4 |
| EIGENVALUES > 1 | 3 | | 5 | | 7 | | 9 | | 4 | | 2 | | 5 | | 5 | | 1 | |

| MATH | 12M-1 | | 12M-2 | | 12M-3 | | 12M-4 | | 12M-5 | | 12M-6 | | 12M-7 | | 12M-8 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance |
| 1 | 3.51 | 35.1 | 3.21 | 29.1 | 4.94 | 30.9 | 6.08 | 43.4 | 4.02 | 25.1 | 3.23 | 24.8 | 5.53 | 42.5 | 5.77 | 32.0 |
| 2 | 1.20 | 12.0 | 1.33 | 12.1 | 1.68 | 10.5 | 1.27 | 9.1 | 1.97 | 12.3 | 1.39 | 10.7 | 1.50 | 11.6 | 1.57 | 8.7 |
| 3 | 1.04 | 10.4 | 1.15 | 10.5 | 1.42 | 8.8 | | | 1.63 | 10.2 | 1.19 | 9.2 | | | 1.52 | 8.4 |
| 4 | | | | | 1.19 | 7.4 | | | 1.10 | 6.9 | 1.03 | 7.9 | | | 1.19 | 6.6 |
| 5 | | | | | | | | | 1.04 | 6.5 | | | | | 1.11 | 6.2 |
| COLUMN TOTAL | 5.75 | 57.5 | 5.69 | 51.7 | 9.23 | 57.6 | 7.35 | 52.5 | 9.76 | 61.0 | 6.84 | 52.6 | 7.03 | 54.1 | 11.16 | 61.9 |
| EIGENVALUES > 1 | 3 | | 3 | | 4 | | 2 | | 5 | | 4 | | 2 | | 5 | |

| WRITING | 12W-1 | | 12W-2 | | 12W-3 | | 12W-4 | | 12W-5 | | 12W-6 | | 12W-7 | | 12W-8 | | 12W-9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance | Eigen-value | % Total Variance |
| 1 | 1.65 | 82.3 | 1.69 | 84.6 | 1.73 | 86.4 | 1.72 | 85.8 | 1.66 | 83.1 | 1.72 | 86.2 | 1.70 | 84.9 | 1.53 | 76.3 | 1.61 | 80.5 |
| COLUMN TOTAL | 1.65 | 82.3 | 1.69 | 84.6 | 1.73 | 86.4 | 1.72 | 85.8 | 1.66 | 83.1 | 1.72 | 86.2 | 1.70 | 84.9 | 1.53 | 76.3 | 1.61 | 80.5 |
| EIGENVALUES > 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | |

**Factor Analysis of Grade 12 Assessments**: The eigenvalues for Grade 12 are presented in Table 22, separately for each of the 26 assessments, along with the percent of total variance accounted for by each eigenvalue. Again, only a small number (five) of the assessments (12R-2, 12R-3, 12R-4, 12R-7, and 12R-8) did not meet Reckase's (1979) criterion for unidimensionality, nor did the scree plots suggest otherwise. However, most of the Grade 12 assessments are clearly unidimensional. There is no clear reason why the multidimensionality for the Grade 12 Assessments is restricted to reading. However, these five assessments had a higher proportion of dichotomous item types than did the four assessments for which unidimensionality was found. An interesting research question might be the effect of the mix of item types on the unidimensionality of performance assessments.

The results of factor analysis, while generally implying unidimensionality for most of the assessments, also show the extent to which some of the ASAP Assessments are multidimensional. For example, 13 out of 67 assessments appear to measure more than a single dimension or construct. The apparent multidimensionality in these assessments is related to the extent to which individual items are tapping different skills or constructs. A more complete factor analysis, including rotation, is needed to fully understand the nature and complexity of the underlying multidimensionality. Results from such an analysis could prove useful for the specification of skill clusters and the development of items for these clusters.

## SECTION 4: SUMMARY

The development of the Arizona Student Assessment Program and the Spring 1992 Pilot Study of the Form A performance assessments has been a major accomplishment for education in the State of Arizona. But it is also an important national milestone for those who are monitoring carefully the emergence of performance assessments as complements or replacements for more traditional modes of assessment.

Much of the discussion about the uses and advantages or disadvantages of performance-based instruments has not included data from large-scale administrations of the instruments. Advocates of performance-based measures have been divided about their purposes. Many argue that the improvement of instruction is a primary reason for the use of these instruments. Performance assessments appeal to many teachers because the tasks resemble familiar teaching strategies that call for student-constructed responses rather than choices. Others advocate their use as replacements for tests that are used currently in high-stakes, accountability-related programs. Use of performance-based measures for the latter purposes, where real decisions about students and programs will be based on student scores, requires that these instruments pass similar rigorous standards for reliability and validity that are required for other instruments used for the same purposes.

The administration of a large-scale testing program using multiple performance assessments is a complex challenge. Although earlier versions of these assessments were field-tested, several unanticipated problems occurred. The problem with the pasted geometric figures not adhering to the test books in Assessment 3M-7 was mentioned earlier. A different problem occurred with Assessment 3M-2. Eight questions relied on a survey conducted by the teacher on the colors of the student's houses. A copy of the survey results was required in order to score these questions. Although specific instructions were given to the teacher asking her or him to return the survey sheet, many failed to do so. Such problems have a potentially substantial effect on assessment scores and the reliability and validity indices. Exceptional care must be taken during development to anticipate and avoid these potential problems.

While this pilot study was not a high-stakes exercise, it was a large-scale census assessment that employed acceptable research standards and produced rich quantities of data for analysis purposes. The characteristics addressed in this Technical Report are the salient technical aspects typically targeted for multiple-choice tests. Of course, modifications have been made where necessary to accommodate the differing challenges presented by non-dichotomous items and tasks. These procedures have been described in the previous sections.

The amount of data produced in an effort to describe the reliability and validity of these 67 instruments is substantial. Each unique assessment has not been discussed individually. Rather, data are reported in tabular form and general comments have been made about each type of analysis across the 67 assessments. However, some summary statements can be made regarding the reliability and validity of the ASAP assessments.

## Reliability

Three kinds of reliability were discussed and reported for each assessment. Inter-rater reliability was reported for each assessment to provide information on the amount of scorer bias or rater error for each assessment. The amount of examinee error was assessed using coefficient alpha. Finally, generalizability indices were used to account for both rater and examinee error in a single index.

The alpha (and generalizability) indices provide estimates of the square of the correlation between an examinee's observed score and his/her true (universe) score. For example, an alpha of .81 implies that the correlation between observed scores and true scores is .90. Similarly, if a generalizability index is equal to .64, it means that the correlation between the observed score and universe score is .80. Therefore, the greater the alpha (or generalizability) index, the greater the correlation between observed and true (or universe) scores. Needless to say, high alpha and generalizability indices are always desirable. However, it may not always be possible to obtain high alpha and generalizability indices. Among other things, the size of these indices will depend upon the number and inter-relatedness of items in a test. Tests with a large number of very homogeneous items will typically yield high alpha and generalizability indices.

There is no single universally accepted standard for the magnitude of a "minimally-acceptable" reliability index. Most well-developed multiple-choice tests contain more than 30 items. The maximum number of items/tasks in the ASAP assessments is 29. Multiple-choice test developers strive for a reliability of at least .80 for a 30-item test. In an attempt to provide a basis for evaluating the ASAP reliability indices, "target" alpha coefficients were calculated using the Spearman-Brown Prophecy Formula (Feldt and Brennan, 1989) using as a criterion a 30-item test with an alpha coefficient of .80. Target reliabilities calculated for each possible ASAP Reading and Mathematics Assessment item total are reported in Table 23. The table also reports the number of assessments with each item total, the number of assessments whose alpha coefficients (obtained from the validity sample 1=1--see Table 19) meet or exceed the target alpha, and the mean alpha differences for those assessments for which the obtained alphas are less than the target alphas.

**Table 23. Comparisons of Obtained ASAP Alpha Coefficients for Reading and Mathematics with Spearman-Brown Estimates Based on the Criterion of a 30-Item Test with an Alpha Coefficient of .80**

| | | Reading | | | Mathematics | | |
|---|---|---|---|---|---|---|---|
| Total Items | Target Alpha | No. of Assmt's | No. of Assmt's ≥ Target | Mean* Diff. | No. of Assmt's | No. of Assmt's ≥ Target | Mean* Diff. |
| 29 | .79 | 1 | 0 | .11 | - | - | - |
| 24 | .76 | - | - | - | 1 | 0 | .08 |
| 22 | .75 | 2 | 1 | .07 | - | - | - |
| 21 | .74 | - | - | - | 2 | 1 | .07 |
| 18 | .71 | 3 | 3 | - | 3 | 2 | .04 |
| 17 | .69 | 3 | 2 | .09 | 1 | 1 | - |
| 16 | .68 | 2 | 0 | .16 | 3 | 3 | - |
| 15 | .67 | - | - | - | 1 | 0 | .08 |
| 14 | .65 | 1 | 1 | - | 2 | 2 | - |
| 13 | .63 | - | - | - | 5 | 4 | .12 |
| 12 | .62 | 3 | 3 | - | 2 | 2 | - |
| 11 | .60 | - | - | - | 3 | 3 | - |
| 10 | .57 | 1 | 1 | - | 2 | 2 | - |
| 9 | .55 | 3 | 2 | .05 | - | - | - |
| 8 | .52 | 1 | 1 | - | - | - | - |
| 5 | .40 | 1 | 1 | - | - | - | - |
| Total | | 21 | 15 | .11 | 25 | 20 | .08 |

* Mean differences between the obtained alpha and the target alpha only for those cases where the obtained alpha was lower than the target alpha.

Using this standard for comparison, 15 (71%) of the 21 Reading Assessments and 20 (80%) of the 25 Mathematics Assessments meet or exceed the criterion alpha coefficient. The average mean difference between the target and obtained alphas was .11 for the six Reading Assessments where the obtained alpha was lower than the target assessment and .08 for the five Mathematics Assessments where the target alpha was not met.

One should be careful not to overinterpret these results. Constructed-response tests obviously behave differently than do multiple-choice tests. Most multiple-choice tests are scored with near perfect reliability, while scorer bias diminishes the reliability of constructed-response assessments. As with any test, the relative importance of test reliability is related directly to the consequence of decisions to be made to which the test scores contribute.

A similar comparison was not made for the Writing Assessments. Each of these consisted only of two items, and the obtained alpha coefficients all would have exceeded this criterion by a large margin.

The median reliability indices for the reliability sample are reported in Table 24. Also reported are the numbers of assessments in each subject area evaluated at each grade level and the averages of the numbers of items across assessments.

**Table 24. Median Reliability Indices for ASAP Assessment Totals**

| Subject | Grade | No. of Assmt's | Avg No. of Items | Alpha | Inter-Rater r | Generalizability One Rater | Generalizability Two Raters |
|---|---|---|---|---|---|---|---|
| Reading | 3 | 5 | 14 | .76 | .88 | .71 | .76 |
| | 8 | 7 | 14 | .66 | .92 | .65 | .70 |
| | 12 | 9 | 16 | .69 | .88 | .65 | .71 |
| | Overall | 21 | 15 | .70 | .90 | .67 | .71 |
| Mathematics | 3 | 8 | 17 | .70 | .93 | .67 | .69 |
| | 8 | 8 * | 13 | .77 | .98 | .77 | .77 |
| | 12 | 8 | 14 | .74 | .97 | .72 | .74 |
| | Overall | 24 | 15 | .73 | .97 | .72 | .73 |
| Writing | 3 | 5 | 2 | .71 | .81 | .66 | .73 |
| | 8 | 6 * | 2 | .73 | .69 | .59 | .70 |
| | 12 | 9 | 2 | .85 | .71 | .69 | .81 |
| | Overall | 20 | 2 | .77 | .76 | .64 | .72 |

* No matched data were received for either 8M-4 or 8W-5.

The median alpha coefficients were .70 for Reading, .73 for Math, and .77 for Writing. These values appear to be relatively high for these kinds of instruments, especially when the number of items per assessment is considered. The Reading and Mathematics Assessments each averaged 15 items. All Writing Assessments consisted of two items—each scored using a rubric. The alpha coefficients reported for the validity sample in Table 19 are generally compatible with those reported for the reliability sample. A total of 37 (57%) of the total-sample indices were as high or higher than those for the reliability sample, and 28 (43%) were lower.

The median inter-rater correlations were high for the Reading and Mathematics Assessments, but lower than expected for Writing. The number of two-rater cases was lower than was called for by the research design.

The median generalizability indices appear to be generally within acceptable ranges. The medians tend to be in the .70s. Those indices based on data from two raters are only slightly higher than those based on a single rater for Reading and Math. This suggests that little is lost by having papers read by a single rater rather than two raters. The difference is somewhat greater for the Writing Assessments than for the Reading or Mathematics Assessments.

A comparison of inter-rater correlations obtained in the site-bias analysis with the intra-site values for the same nine Assessments suggests that scoring site may be a source of small scoring error. The difference between intra-site inter-rater indices and those from different sites ranged from -.03 to .17, with the average difference slightly less than .07.

The differences in reliability between response modes in reading and mathematics were also analyzed for the reliability sample. As expected, there was greater rater agreement on dichotomous-response questions than for short-answer questions. Both of these response modes

showed higher rater consistency than for the responses that were scored using rubrics. It is interesting to note that there was perfect rater agreement on dichtomously-scored items on two of the forty-five assessments and that the median inter-rater correlation across all of these assessments was only .95 for this item type.

## Validity

Three aspects of the validity of the ASAP instruments were reviewed: content validity, criterion-related validity, and construct validity.

The content validity of any assessment is dependent upon procedures employed during the development stage. As discussed earlier, each assessment was designed to measure a specific cluster of related Arizona Essential Skills. Iterative review and revision procedures were conducted over a period of three years to produce the instruments administered in the pilot study. Several groups of experts on content and fairness were employed during the process, as were the results from a large-scale field test on earlier versions conducted in spring 1990.

Two types of criteria were planned for use in the criterion-related validity analyses—district CRTs and scores on the ITBS and TAP from spring 1991. Many Arizona districts monitor progress in reading, language, and mathematics with CRT instruments. Those who use CRTs were asked to indicate for each participating student whether the student scored HIGH, MEDIUM, or LOW (according to district standards) in each of the three subject areas. Subsequent to the administration of the pilot study, it was learned that there was confusion in a number of districts about how to respond to this request for data. In more than one district, this item was left blank. In others, responses were made using teacher ratings. Rather than exclude the data that were provided, it was decided to use all of the data and to rename the criterion a "local rating" score. The correlations were modest but positive as is the case with most of these types of comparisons with norm-referenced multiple-choice tests. Most of the F-ratios were significant, confirming that the three subgroups (HIGH, MEDIUM, LOW) performed differently as expected on the assessments.

The second criterion used was the scores obtained by the participating students on the ITBS (grades 2 and 7) and TAP (grade 11) during spring 1991. Analysis of the correlations produced for ASAP scores with the ITBS/TAP Vocabulary, Reading Comprehension, Language Total, Math Total and Composite scores are substantial.

As expected, ASAP scores correlated consistently highest with ITBS/TAP Composite scores. The Reading and Language Assessment scores correlated most highly with ITBS/TAP Reading Comprehension and Language Total (Written Expression for TAP) scores, and ASAP Mathematics scores correlated most highly with ITBS/TAP Mathematics scores. The level of discriminant validity in these analyses was slightly lower than might have been expected somewhat because of the amount of reading and writing required for the Mathematics Assessments. The correlations for ASAP Reading and Math subscores with all ITBS/TAP scores tended to increase with grade level. The strongest Writing correlations were observed for eighth graders.

Two analyses were performed to produce information about construct validity. Item analysis data are presented for each assessment in the Appendix. Included are inter-item correlation values, item-test correlations, alpha coefficients, item difficulty values with standard deviations, and summary statistics. All of these values are based on data from the validity sample. For the most part, these data represent highly acceptable values for this kind of assessment.

For all but 13 of the 67 assessments, the factor analyses produced highest eigenvalues that accounted for 20% or more of the total variance. Scree plots for these 13 assessments tend to confirm the lack of single relatively dominant factors for these assessments as well. The first eigenvalue in all of the Writing Assessments accounts for 75% or more of the total variance. It is safe to conclude that the majority of these assessments are unidimensional.

## Conclusion

The ASAP program has already made an impact on instruction in Arizona school districts. The 1990 field test of preliminary Form A Assessments included 53 districts (25%). The Pilot Study was conducted in every school district. Three forms (preliminary Form A, Form B, and Form C) are currently available for all school districts to use as they see fit.

A major purpose of this Technical Report was to evaluate the psychometric characteristics of the 67 instruments that comprise the 1992 Pilot Study. The data show that these instruments generally meet acceptable psychometric standards for providing information that may be useful for contributing to decisions made about instructional programs and individual students. Additional work is planned that will focus on differences in performance among gender and ethnic groups.

No testing instrument can provide all of the information required for making intelligent educational decisions. Whenever decisions about individual students or educational programs incorporate test-score data, it is important that the limitations of the instrument are known. This Pilot Study was conducted under relatively low-stakes conditions. To the extent that these conditions can be preserved in future ASAP administrations, and to the extent that ASAP scores are used conjointly with other performance indicators to help guide decisions, these instruments generally display the technical strength to make positive contributions to the decision-making process.

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# APPENDIX A

## SCANNABLE SCORING SHEET

| OBSERVATION | NOT SCORABLE | INCORRECT NO RESPONSE | SCORE RANGE | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 |
| 1 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 2 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 3 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 4 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 5 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 6 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 7 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 8 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 9 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 10 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 11 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 12 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 13 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 14 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 15 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 16 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 17 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 18 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 19 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 20 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 21 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 22 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 23 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 24 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 25 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 26 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 27 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 28 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 29 | NS | ○ | 1 | 2 | 3 | 4 | 5 |
| 30 | NS | ○ | 1 | 2 | 3 | 4 | 5 |

ABCDEFGHIJ-NCS-998765432



ARIZONA STUDENT ASSESSMENT PROGRAM

# Essential Skills Assessments

# SCANNABLE FORM FOR SCORERS

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I.D. Number

Site | Scorer

| Site | Scorer |
|---|---|
| 0 | 0 |
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |

GRADE

○ 3

○ 8

○ 12

Day scored

① Day 1
② Day 2
③ Day 3
④ Day 4

ASSESSMENT NUMBER

| READING | | WRITING | | MATHEMATICS | |
|---|---|---|---|---|---|
| 1 ○ | 6 ○ | 1 ○ | 6 ○ | 1 ○ | 6 ○ |
| 2 ○ | 7 ○ | 2 ○ | 7 ○ | 2 ○ | 7 ○ |
| 3 ○ | 8 ○ | 3 ○ | 8 ○ | 3 ○ | 8 ○ |
| 4 ○ | 9 ○ | 4 ○ | 9 ○ | 4 ○ | 9 ○ |
| 5 ○ | | 5 ○ | | 5 ○ | |

# APPENDIX B

Item InterCorrelations

Item-Test Correlations

Alpha Reliabilities

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, READING ASSESSMENT 1

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .56 | .42 | .79 | .12 | .19 | .20 | .14 | .15 | .18 | .16 | .13 | .18 | .15 | .15 | .15 | .19 |
| 2 | .56 | 1.00 | .51 | .58 | .19 | .21 | .22 | .16 | .18 | .19 | .15 | .14 | .21 | .20 | .17 | .20 | .14 |
| 3 | .42 | .51 | 1.00 | .36 | .21 | .19 | .30 | .25 | .15 | .20 | .22 | .19 | .29 | .21 | .25 | .29 | .19 |
| 4 | .79 | .58 | .36 | 1.00 | .12 | .23 | .20 | .14 | .15 | .17 | .16 | .15 | .14 | .10 | .14 | .11 | .19 |
| 5 | .12 | .19 | .21 | .12 | 1.00 | .17 | .22 | .16 | .15 | .24 | .19 | .18 | .16 | .15 | .19 | .12 | .13 |
| 6 | .19 | .21 | .19 | .23 | .17 | 1.00 | .24 | .17 | .18 | .19 | .18 | .26 | .23 | .16 | .27 | .14 | .25 |
| 7 | .20 | .22 | .30 | .20 | .22 | .24 | 1.00 | .42 | .25 | .30 | .29 | .25 | .33 | .31 | .29 | .26 | .28 |
| 8 | .14 | .16 | .25 | .14 | .16 | .17 | .42 | 1.00 | .27 | .36 | .32 | .29 | .41 | .45 | .36 | .34 | .22 |
| 9 | .15 | .18 | .15 | .15 | .15 | .18 | .25 | .27 | 1.00 | .25 | .21 | .22 | .26 | .27 | .24 | .29 | .22 |
| 10 | .18 | .19 | .20 | .17 | .24 | .19 | .30 | .36 | .25 | 1.00 | .40 | .25 | .41 | .36 | .33 | .33 | .31 |
| 11 | .16 | .15 | .22 | .16 | .19 | .18 | .29 | .32 | .21 | .40 | 1.00 | .24 | .34 | .39 | .27 | .30 | .24 |
| 12 | .13 | .14 | .19 | .15 | .18 | .26 | .25 | .29 | .22 | .25 | .24 | 1.00 | .46 | .43 | .76 | .49 | .22 |
| 13 | .18 | .21 | .29 | .14 | .16 | .23 | .33 | .41 | .26 | .41 | .34 | .46 | 1.00 | .62 | .54 | .57 | .27 |
| 14 | .15 | .20 | .21 | .10 | .15 | .16 | .31 | .45 | .27 | .36 | .39 | .43 | .62 | 1.00 | .44 | .54 | .27 |
| 15 | .15 | .17 | .25 | .14 | .19 | .27 | .29 | .36 | .24 | .33 | .27 | .76 | .54 | .44 | 1.00 | .53 | .22 |
| 16 | .15 | .20 | .29 | .11 | .12 | .14 | .26 | .34 | .29 | .33 | .30 | .49 | .57 | .54 | .53 | 1.00 | .19 |
| 17 | .19 | .14 | .19 | .19 | .13 | .25 | .28 | .22 | .22 | .31 | .24 | .22 | .27 | .27 | .22 | .19 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 4 |
| MEAN | .68 | .77 | .86 | .68 | .70 | .54 | .82 | .90 | .61 | 3.00 | 1.58 | .77 | .87 | .91 | .76 | .86 | 2.13 |
| SD | .47 | .42 | .34 | .47 | .47 | .50 | .39 | .30 | .49 | 1.14 | .62 | .43 | .34 | .30 | .43 | .35 | 1.16 |
| CORR(i,T) | .50 | .49 | .51 | .49 | .39 | .46 | .55 | .54 | .47 | .68 | .56 | .56 | .64 | .60 | .61 | .57 | .60 |

TOTAL TEST: MEAN = 17.45 SD = 4.76 ALPHA = .81

NUMBER OF SUBJECTS: 614

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, READING ASSESSMENT 2

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .23 | .16 | .21 | .21 | .23 | .12 | .22 | .25 |
| 2 | .23 | 1.00 | .14 | .22 | .21 | .16 | .06 | .12 | .15 |
| 3 | .16 | .14 | 1.00 | .18 | .16 | .17 | .13 | .12 | .12 |
| 4 | .21 | .22 | .18 | 1.00 | .33 | .31 | .22 | .28 | .32 |
| 5 | .21 | .21 | .16 | .33 | 1.00 | .28 | .13 | .20 | .29 |
| 6 | .23 | .16 | .17 | .31 | .28 | 1.00 | .47 | .35 | .45 |
| 7 | .12 | .06 | .13 | .22 | .13 | .47 | 1.00 | .35 | .34 |
| 8 | .22 | .12 | .12 | .28 | .20 | .35 | .35 | 1.00 | .41 |
| 9 | .25 | .15 | .12 | .32 | .29 | .45 | .34 | .41 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 2 | 3 | 4 | 4 | 4 | 4 |
| MEAN | .82 | .89 | .73 | 1.70 | 1.88 | 2.43 | 2.09 | 2.64 | 2.42 |
| SD | .38 | .31 | .44 | .60 | 1.38 | .91 | .81 | 1.03 | 1.16 |
| CORR(i,T) | .42 | .33 | .33 | .57 | .64 | .70 | .57 | .64 | .72 |

TOTAL TEST: MEAN = 15.61 SD = 4.24 ALPHA = .71

NUMBER OF SUBJECTS: 552

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, READING ASSESSMENT 3

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .41 | .24 | .25 | .29 | .27 | .16 | .23 | .14 | .20 | .20 | .10 | .13 | .20 | .21 | .26 | .17 | .19 |
| 2 | .41 | 1.00 | .41 | .35 | .31 | .32 | .26 | .26 | .33 | .25 | .29 | .12 | .21 | .25 | .19 | .19 | .20 | .19 |
| 3 | .24 | .41 | 1.00 | .37 | .40 | .34 | .22 | .24 | .24 | .23 | .27 | .19 | .24 | .25 | .24 | .20 | .12 | .25 |
| 4 | .25 | .35 | .37 | 1.00 | .43 | .36 | .21 | .21 | .24 | .24 | .24 | .13 | .24 | .19 | .18 | .22 | .15 | .25 |
| 5 | .29 | .31 | .40 | .43 | 1.00 | .40 | .23 | .24 | .22 | .28 | .28 | .21 | .32 | .25 | .24 | .26 | .17 | .28 |
| 6 | .27 | .32 | .34 | .36 | .40 | 1.00 | .27 | .27 | .25 | .26 | .28 | .25 | .32 | .27 | .25 | .23 | .22 | .23 |
| 7 | .16 | .26 | .22 | .21 | .23 | .27 | 1.00 | .50 | .61 | .45 | .53 | .16 | .34 | .33 | .23 | .27 | .17 | .25 |
| 8 | .23 | .26 | .24 | .21 | .24 | .27 | .50 | 1.00 | .51 | .55 | .58 | .22 | .32 | .28 | .28 | .34 | .20 | .29 |
| 9 | .14 | .33 | .24 | .24 | .22 | .25 | .61 | .51 | 1.00 | .35 | .39 | .19 | .23 | .24 | .22 | .25 | .20 | .26 |
| 10 | .20 | .25 | .23 | .24 | .28 | .26 | .45 | .55 | .35 | 1.00 | .78 | .22 | .32 | .29 | .24 | .36 | .15 | .26 |
| 11 | .20 | .29 | .27 | .24 | .28 | .28 | .53 | .58 | .39 | .78 | 1.00 | .25 | .38 | .31 | .29 | .30 | .17 | .30 |
| 12 | .10 | .12 | .19 | .13 | .21 | .25 | .16 | .22 | .19 | .22 | .25 | 1.00 | .49 | .41 | .29 | .26 | .28 | .26 |
| 13 | .13 | .21 | .24 | .24 | .32 | .32 | .34 | .32 | .23 | .32 | .38 | .49 | 1.00 | .59 | .25 | .28 | .20 | .30 |
| 14 | .20 | .25 | .25 | .19 | .25 | .27 | .33 | .28 | .24 | .29 | .31 | .41 | .59 | 1.00 | .28 | .32 | .24 | .28 |
| 15 | .21 | .19 | .24 | .18 | .24 | .25 | .23 | .28 | .22 | .24 | .29 | .29 | .25 | .28 | 1.00 | .32 | .33 | .23 |
| 16 | .26 | .19 | .20 | .22 | .26 | .23 | .27 | .34 | .25 | .36 | .30 | .26 | .28 | .32 | .32 | 1.00 | .34 | .33 |
| 17 | .17 | .20 | .12 | .15 | .17 | .22 | .17 | .20 | .20 | .15 | .17 | .28 | .20 | .24 | .33 | .34 | 1.00 | .18 |
| 18 | .19 | .19 | .25 | .25 | .28 | .23 | .25 | .29 | .26 | .26 | .30 | .26 | .30 | .28 | .23 | .33 | .18 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 |
| MEAN | .83 | .78 | .81 | .77 | .78 | .75 | .81 | .83 | .88 | .75 | .71 | .73 | .63 | .73 | .90 | .87 | .85 | 2.82 |
| SD | .37 | .41 | .39 | .42 | .42 | .43 | .39 | .37 | .32 | .43 | .45 | .44 | .48 | .44 | .30 | .34 | .36 | .98 |
| CORR(i,T) | .44 | .53 | .53 | .52 | .57 | .57 | .60 | .63 | .56 | .63 | .67 | .50 | .62 | .60 | .49 | .55 | .42 | .62 |

TOTAL TEST: MEAN = 16.24 SD = 4.39 ALPHA = .86

NUMBER OF SUBJECTS: 585

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, READING ASSESSMENT 4

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .14 | .18 | .15 | .17 | .14 | .19 | .22 | .10 | .09 | .18 | .21 | .14 | .06 | .09 | .19 | .17 | .07 |
| 2 | .14 | 1.00 | .37 | .91 | .14 | .16 | .20 | .19 | .16 | .16 | .14 | .17 | .16 | .13 | .20 | .12 | .11 | .12 |
| 3 | .18 | .37 | 1.00 | .31 | .12 | .22 | .20 | .22 | .10 | .16 | .24 | .16 | .17 | .14 | .16 | .19 | .13 | .09 |
| 4 | .15 | .91 | .31 | 1.00 | .16 | .20 | .20 | .23 | .16 | .19 | .18 | .22 | .14 | .15 | .18 | .12 | .11 | .12 |
| 5 | .17 | .14 | .12 | .16 | 1.00 | .34 | .31 | .26 | .24 | .22 | .15 | .24 | .17 | .15 | .15 | .19 | .14 | .16 |
| 6 | .14 | .16 | .22 | .20 | .34 | 1.00 | .25 | .25 | .18 | .17 | .15 | .22 | .19 | .15 | .16 | .13 | .09 | .06 |
| 7 | .19 | .20 | .20 | .20 | .31 | .25 | 1.00 | .26 | .31 | .23 | .27 | .26 | .17 | .16 | .09 | .26 | .21 | .08 |
| 8 | .22 | .19 | .22 | .23 | .26 | .25 | .26 | 1.00 | .18 | .18 | .23 | .44 | .29 | .23 | .18 | .15 | .21 | .16 |
| 9 | .10 | .16 | .10 | .16 | .24 | .18 | .31 | .18 | 1.00 | .17 | .16 | .14 | .10 | .13 | .12 | .18 | .21 | .18 |
| 10 | .09 | .16 | .16 | .19 | .22 | .17 | .23 | .18 | .17 | 1.00 | .32 | .37 | .29 | .20 | .20 | .20 | .18 | .13 |
| 11 | .18 | .14 | .24 | .18 | .15 | .15 | .27 | .23 | .16 | .32 | 1.00 | .29 | .35 | .22 | .17 | .16 | .19 | .09 |
| 12 | .21 | .17 | .16 | .22 | .24 | .22 | .26 | .44 | .14 | .37 | .29 | 1.00 | .57 | .42 | .27 | .22 | .23 | .12 |
| 13 | .14 | .16 | .17 | .14 | .17 | .19 | .17 | .29 | .10 | .29 | .35 | .57 | 1.00 | .39 | .16 | .13 | .17 | .14 |
| 14 | .06 | .13 | .14 | .15 | .15 | .15 | .16 | .23 | .13 | .20 | .22 | .42 | .39 | 1.00 | .14 | .14 | .11 | .07 |
| 15 | .09 | .20 | .16 | .18 | .15 | .16 | .09 | .18 | .12 | .20 | .17 | .27 | .16 | .14 | 1.00 | .14 | .09 | .09 |
| 16 | .19 | .12 | .19 | .12 | .19 | .13 | .26 | .15 | .18 | .20 | .16 | .22 | .13 | .14 | .14 | 1.00 | .21 | .15 |
| 17 | .17 | .11 | .13 | .11 | .14 | .09 | .21 | .21 | .21 | .18 | .19 | .23 | .17 | .11 | .09 | .21 | 1.00 | .15 |
| 18 | .07 | .12 | .09 | .12 | .16 | .06 | .08 | .16 | .18 | .13 | .09 | .12 | .14 | .07 | .09 | .15 | .15 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 |
| MEAN | .92 | .77 | .93 | .77 | .82 | .84 | .75 | .95 | .53 | .88 | .92 | .96 | .97 | .92 | .85 | .61 | 2.85 | 2.14 |
| SD | .27 | .42 | .25 | .42 | .38 | .36 | .43 | .23 | .50 | .33 | .27 | .19 | .17 | .27 | .36 | .49 | .81 | .92 |
| CORR(i,T) | .36 | .52 | .43 | .53 | .49 | .43 | .53 | .50 | .49 | .47 | .45 | .54 | .44 | .38 | .38 | .48 | .53 | .49 |

TOTAL TEST: MEAN = 18.39 SD = 3.39 ALPHA = .74

NUMBER OF SUBJECTS: 559

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, READING ASSESSMENT 5

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .18 | .15 | .09 | .13 | .14 | .12 | .12 | .15 |
| 2 | .18 | 1.00 | .17 | .16 | .09 | .00 | .01 | .03 | .10 |
| 3 | .15 | .17 | 1.00 | .11 | .16 | .06 | .05 | .04 | .07 |
| 4 | .09 | .16 | .11 | 1.00 | .07 | .10 | .15 | .14 | .17 |
| 5 | .13 | .09 | .16 | .07 | 1.00 | .17 | .19 | .10 | .02 |
| 6 | .14 | .00 | .06 | .10 | .17 | 1.00 | .50 | .44 | .08 |
| 7 | .12 | .01 | .05 | .15 | .19 | .50 | 1.00 | .44 | .12 |
| 8 | .12 | .03 | .04 | .14 | .10 | .44 | .44 | 1.00 | .15 |
| 9 | .15 | .10 | .07 | .17 | .02 | .08 | .12 | .15 | 1.00 |
| MAX SCORE | 2 | 5 | 1 | 2 | 1 | 1 | 1 | 1 | 4 |
| MEAN | 1.48 | 4.59 | .79 | 1.90 | .66 | .92 | .87 | .83 | 2.31 |
| SD | .66 | 1.00 | .41 | .35 | .49 | .29 | .35 | .38 | .83 |
| CORR(i,T) | .54 | .59 | .39 | .40 | .39 | .40 | .44 | .44 | .54 |

TOTAL TEST: MEAN = 14.36 SD = 2.32 ALPHA = .50

NUMBER OF SUBJECTS: 614

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, MATHEMATICS ASSESSMENT 1

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | -.02 | .04 | .01 | .09 | .08 | .11 | .15 | .14 | .13 | .09 | .06 |
| 2 | -.02 | 1.00 | .08 | .11 | .16 | .12 | .10 | .02 | -.03 | -.03 | .03 | .02 |
| 3 | .04 | .08 | 1.00 | .39 | .36 | .14 | .09 | .15 | .10 | .12 | .08 | .09 |
| 4 | .01 | .11 | .39 | 1.00 | .59 | .12 | .24 | .13 | .07 | .08 | .08 | .12 |
| 5 | .09 | .16 | .36 | .59 | 1.00 | .17 | .22 | .13 | .07 | .10 | .03 | .09 |
| 6 | .08 | .12 | .14 | .12 | .17 | 1.00 | .60 | .28 | .25 | .26 | .25 | .20 |
| 7 | .11 | .10 | .09 | .24 | .22 | .60 | 1.00 | .17 | .16 | .21 | .19 | .18 |
| 8 | .15 | .02 | .15 | .13 | .13 | .28 | .17 | 1.00 | .59 | .53 | .46 | .18 |
| 9 | .14 | -.03 | .10 | .07 | .07 | .25 | .16 | .59 | 1.00 | .74 | .61 | .13 |
| 10 | .13 | -.03 | .12 | .08 | .10 | .26 | .21 | .53 | .74 | 1.00 | .66 | .11 |
| 11 | .09 | .03 | .08 | .08 | .03 | .25 | .19 | .46 | .61 | .66 | 1.00 | .10 |
| 12 | .06 | .02 | .09 | .12 | .09 | .20 | .18 | .18 | .13 | .11 | .10 | 1.00 |
| MAX SCORE | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 4 |
| MEAN | .97 | .99 | 1.73 | 1.81 | 1.87 | 1.54 | 1.47 | .88 | .93 | .92 | .88 | 1.40 |
| SD | .16 | .10 | .65 | .53 | .42 | .78 | .81 | .34 | .26 | .27 | .32 | .88 |
| CORR(I,T) | .20 | .16 | .48 | .52 | .50 | .68 | .66 | .52 | .49 | .51 | .47 | .51 |

TOTAL TEST: MEAN = 15.42 SD = 2.96 ALPHA = .68

NUMBER OF SUBJECTS: 539

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, MATHEMATICS ASSESSMENT 2

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .58 | -.01 | .01 | .00 | -.00 | .02 | .02 | .01 | .02 | .11 | -.03 | .05 | -.04 | .06 | -.03 | .11 | .19 | .10 | -.04 | .19 |
| 2 | .58 | 1.00 | -.07 | -.07 | -.07 | -.07 | -.05 | -.06 | -.04 | -.06 | .13 | .04 | .11 | .02 | .09 | .04 | .15 | .32 | .12 | .02 | .22 |
| 3 | -.01 | -.07 | 1.00 | .94 | .90 | .90 | .85 | .89 | .78 | .93 | -.05 | -.05 | -.03 | -.07 | .03 | -.05 | -.07 | -.02 | -.04 | .03 | -.11 |
| 4 | .01 | -.07 | .94 | 1.00 | .92 | .92 | .88 | .93 | .80 | .96 | -.05 | -.05 | -.07 | -.07 | .01 | -.05 | -.10 | -.05 | -.06 | .00 | -.15 |
| 5 | .00 | -.07 | .90 | .92 | 1.00 | .86 | .82 | .86 | .85 | .90 | -.05 | -.05 | -.04 | -.07 | .04 | -.05 | -.05 | -.03 | -.05 | -.01 | -.13 |
| 6 | -.00 | -.07 | .90 | .92 | .86 | 1.00 | .95 | .98 | .86 | .93 | -.05 | -.04 | -.02 | -.06 | .02 | -.04 | -.09 | -.04 | -.02 | .03 | -.11 |
| 7 | .02 | -.05 | .85 | .88 | .82 | .95 | 1.00 | .94 | .89 | .87 | -.04 | -.05 | .03 | -.07 | .07 | -.05 | -.05 | -.00 | -.02 | .03 | -.08 |
| 8 | .02 | -.06 | .89 | .93 | .86 | .98 | .94 | 1.00 | .87 | .93 | -.05 | -.04 | -.04 | -.06 | .02 | -.04 | -.09 | -.05 | -.03 | .03 | -.12 |
| 9 | .01 | -.04 | .78 | .80 | .85 | .86 | .89 | .87 | 1.00 | .82 | -.01 | -.05 | .04 | -.07 | .07 | -.05 | .02 | .01 | -.03 | .05 | -.06 |
| 10 | .02 | -.06 | .93 | .96 | .90 | .93 | .87 | .93 | .82 | 1.00 | -.05 | -.05 | -.05 | -.07 | .03 | -.05 | -.09 | -.04 | -.06 | .00 | -.13 |
| 11 | .11 | .13 | -.05 | -.05 | -.05 | -.05 | -.04 | -.05 | -.01 | -.05 | 1.00 | .14 | .22 | .20 | .17 | .14 | .28 | .14 | .18 | .13 | .12 |
| 12 | -.03 | .04 | -.05 | -.05 | -.05 | -.04 | -.05 | -.04 | -.05 | -.05 | .14 | 1.00 | .22 | .71 | .17 | 1.00 | .13 | .04 | .15 | .17 | .08 |
| 13 | .05 | .11 | -.03 | -.07 | -.04 | -.02 | .03 | -.04 | .04 | -.05 | .22 | .22 | 1.00 | .15 | .53 | .22 | .44 | .14 | .46 | .25 | .18 |
| 14 | -.04 | .02 | -.07 | -.07 | -.07 | -.06 | -.07 | -.06 | -.07 | -.07 | .20 | .71 | .15 | 1.00 | .11 | .71 | .08 | .06 | .10 | .12 | .01 |
| 15 | .06 | .09 | .03 | .01 | .04 | .02 | .07 | .02 | .07 | .03 | .17 | .17 | .53 | .11 | 1.00 | .17 | .43 | .14 | .40 | .31 | .15 |
| 16 | -.03 | .04 | -.05 | -.05 | -.05 | -.04 | -.05 | -.04 | -.05 | -.05 | .14 | 1.00 | .22 | .71 | .17 | 1.00 | .13 | .04 | .15 | .17 | .08 |
| 17 | .11 | .15 | -.07 | -.10 | -.05 | -.09 | -.05 | -.09 | .02 | -.09 | .28 | .13 | .44 | .08 | .43 | .13 | 1.00 | .18 | .43 | .31 | .20 |
| 18 | .19 | .32 | -.02 | -.05 | -.03 | -.04 | -.00 | -.05 | .01 | -.04 | .14 | .04 | .14 | .06 | .14 | .04 | .18 | 1.00 | .12 | .09 | .30 |
| 19 | .10 | .12 | -.04 | -.06 | -.05 | -.02 | -.02 | -.03 | -.03 | -.06 | .18 | .15 | .46 | .10 | .40 | .15 | .43 | .12 | 1.00 | .26 | .15 |
| 20 | -.04 | .02 | .03 | .00 | -.01 | .03 | .03 | .03 | .05 | .00 | .13 | .17 | .25 | .12 | .31 | .17 | .31 | .09 | .26 | 1.00 | .08 |
| 21 | .19 | .22 | -.11 | -.15 | -.13 | -.11 | -.08 | -.12 | -.06 | -.13 | .12 | .08 | .18 | .01 | .15 | .08 | .20 | .30 | .15 | .08 | 1.00 |
| MAX SCORE | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 4 |
| MEAN | .70 | .70 | .47 | .49 | .45 | .51 | .48 | .51 | .44 | .49 | .90 | 1.00 | .96 | 1.00 | .93 | 1.00 | .90 | .62 | .92 | .94 | 1.58 |
| SD | .46 | .77 | .50 | .50 | .50 | .50 | .50 | .50 | .50 | .50 | .29 | .05 | .20 | .06 | .25 | .05 | .30 | .70 | .28 | .25 | .95 |
| CORR(i,T) | .31 | .32 | .77 | .77 | .76 | .79 | .80 | .79 | .77 | .78 | .18 | .07 | .24 | .02 | .28 | .07 | .23 | .33 | .22 | .19 | .28 |

TOTAL TEST: MEAN = 15.99 SD = 4.36 ALPHA = .79

NUMBER OF SUBJECTS: 484



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CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, MATHEMATICS ASSESSMENT 3

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| 2 | .00 | 1.00 | -.01 | .06 | -.01 | .13 | .22 | .05 | .14 | .11 | .16 | .12 | .16 | .18 | .18 |
| 3 | .00 | -.01 | 1.00 | .25 | .47 | .17 | .01 | .14 | .15 | -.08 | -.01 | -.02 | -.01 | -.04 | .04 |
| 4 | .00 | .06 | .25 | 1.00 | .38 | .44 | .02 | .23 | .15 | -.07 | -.01 | .00 | -.01 | -.04 | .04 |
| 5 | .00 | -.01 | .47 | .38 | 1.00 | .36 | .05 | .27 | .10 | -.08 | -.00 | -.02 | -.00 | -.05 | .02 |
| 6 | .00 | .13 | .17 | .44 | .36 | 1.00 | .08 | .46 | .17 | -.07 | .05 | .08 | .11 | .00 | .10 |
| 7 | .00 | .22 | .01 | .02 | .05 | .08 | 1.00 | .04 | .07 | .07 | .12 | .16 | .16 | .18 | .10 |
| 8 | .00 | .05 | .14 | .23 | .27 | .46 | .04 | 1.00 | .15 | -.07 | .13 | .05 | .12 | -.02 | .09 |
| 9 | .00 | .14 | .15 | .15 | .10 | .17 | .07 | .15 | 1.00 | .13 | .06 | .07 | .08 | .03 | .12 |
| 10 | .00 | .11 | -.08 | -.07 | -.08 | -.07 | .07 | -.07 | .13 | 1.00 | .01 | -.00 | .01 | .00 | .09 |
| 11 | .00 | .16 | -.01 | -.01 | -.00 | .05 | .12 | .13 | .06 | .01 | 1.00 | .59 | .54 | .26 | .14 |
| 12 | .00 | .12 | -.02 | .00 | -.02 | .08 | .16 | .05 | .07 | -.00 | .59 | 1.00 | .65 | .34 | .19 |
| 13 | .00 | .16 | -.01 | -.01 | -.00 | .11 | .16 | .12 | .08 | .01 | .54 | .65 | 1.00 | .31 | .16 |
| 14 | .00 | .18 | -.04 | -.04 | -.05 | .00 | .18 | -.02 | .03 | .00 | .26 | .34 | .31 | 1.00 | .16 |
| 15 | .00 | .18 | .04 | .04 | .02 | .10 | .10 | .09 | .12 | .09 | .14 | .19 | .16 | .16 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| MEAN | 1.00 | .89 | .98 | .94 | .98 | .90 | .84 | .87 | .79 | .75 | .79 | .75 | .79 | .50 | 1.45 |
| SD | .00 | .32 | .14 | .23 | .13 | .30 | .37 | .34 | .41 | .43 | .40 | .44 | .41 | .50 | 1.06 |
| CORR(i,T) | .00 | .42 | .16 | .24 | .20 | .38 | .37 | .34 | .38 | .23 | .54 | .59 | .58 | .47 | .64 |

TOTAL TEST: MEAN = 13.22 SD = 2.49 ALPHA = .59

NUMBER OF SUBJECTS: 540

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, MATHEMATICS ASSESSMENT 4

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .71 | .35 | .32 | .26 | .31 | .31 | .28 | .13 | .12 | .13 | .10 | .10 | .09 | .03 | .08 | .06 | .02 | .08 | .12 | .02 |
| 2 | .71 | 1.00 | .24 | .22 | .18 | .22 | .22 | .20 | .08 | .07 | .10 | .10 | .06 | .05 | .04 | .04 | .08 | .05 | .04 | .06 | -.01 |
| 3 | .35 | .24 | 1.00 | .92 | .17 | .21 | .21 | .19 | .17 | .15 | .21 | .24 | .21 | .23 | .08 | .12 | .16 | .11 | .18 | .15 | .09 |
| 4 | .32 | .22 | .92 | 1.00 | .16 | .19 | .19 | .17 | .15 | .13 | .19 | .23 | .20 | .20 | .06 | .10 | .13 | .10 | .16 | .15 | .11 |
| 5 | .26 | .18 | .17 | .16 | 1.00 | .67 | .33 | .30 | .29 | .26 | .04 | .12 | .03 | .15 | .07 | .12 | .08 | .09 | .06 | .10 | .13 |
| 6 | .31 | .22 | .21 | .19 | .67 | 1.00 | .39 | .36 | .16 | .15 | -.01 | .07 | .05 | .18 | .02 | .09 | .06 | .00 | .09 | .14 | .14 |
| 7 | .31 | .22 | .21 | .19 | .33 | .39 | 1.00 | .91 | .26 | .23 | .02 | .14 | .13 | .11 | -.02 | .09 | .06 | .04 | .15 | -.00 | .10 |
| 8 | .28 | .20 | .19 | .17 | .30 | .36 | .91 | 1.00 | .23 | .21 | .01 | .14 | .11 | .10 | -.03 | .08 | .05 | .06 | .13 | -.01 | .08 |
| 9 | .13 | .08 | .17 | .15 | .29 | .16 | .26 | .23 | 1.00 | .83 | .02 | .06 | -.03 | .04 | .07 | -.01 | -.05 | .05 | .07 | .08 | .08 |
| 10 | .12 | .07 | .15 | .13 | .26 | .15 | .23 | .21 | .83 | 1.00 | .07 | .04 | -.01 | .02 | .06 | .00 | .00 | .05 | .05 | .04 | .04 |
| 11 | .13 | .10 | .21 | .19 | .04 | -.01 | .02 | .01 | .02 | .07 | 1.00 | .20 | .29 | .30 | .07 | .12 | .16 | .17 | .14 | .17 | .09 |
| 12 | .10 | .10 | .24 | .23 | .12 | .07 | .14 | .14 | .06 | .04 | .20 | 1.00 | .21 | .26 | .11 | .11 | .18 | .26 | .23 | .10 | .10 |
| 13 | .10 | .06 | .21 | .20 | .03 | .05 | .13 | .11 | -.03 | -.01 | .29 | .21 | 1.00 | .36 | .13 | .17 | .18 | .10 | .21 | .11 | .12 |
| 14 | .09 | .05 | .23 | .20 | .15 | .18 | .11 | .10 | .04 | .02 | .30 | .26 | .36 | 1.00 | .04 | .22 | .24 | .14 | .20 | .14 | .12 |
| 15 | .03 | .04 | .08 | .06 | .07 | .02 | -.02 | -.03 | .07 | .06 | .07 | .11 | .13 | .04 | 1.00 | .12 | .13 | .12 | .11 | .06 | .12 |
| 16 | .08 | .04 | .12 | .10 | .12 | .09 | .09 | .08 | -.01 | .00 | .12 | .11 | .17 | .22 | .12 | 1.00 | .50 | .08 | .27 | .11 | .11 |
| 17 | .06 | .08 | .16 | .13 | .08 | .06 | .06 | .05 | -.05 | .00 | .16 | .18 | .18 | .24 | .13 | .50 | 1.00 | .12 | .18 | .16 | .14 |
| 18 | .02 | .05 | .11 | .10 | .09 | .00 | .04 | .06 | .05 | .05 | .17 | .26 | .10 | .14 | .12 | .08 | .12 | 1.00 | .14 | .12 | .14 |
| 19 | .08 | .04 | .18 | .16 | .06 | .09 | .15 | .13 | .07 | .05 | .14 | .23 | .21 | .20 | .11 | .27 | .18 | .14 | 1.00 | .26 | .27 |
| 20 | .12 | .06 | .15 | .15 | .10 | .14 | -.00 | -.01 | .08 | .04 | .17 | .10 | .11 | .14 | .06 | .11 | .16 | .12 | .26 | 1.00 | .33 |
| 21 | .02 | -.01 | .09 | .11 | .13 | .14 | .10 | .08 | .08 | .04 | .09 | .10 | .12 | .12 | .12 | .11 | .14 | .14 | .27 | .33 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| MEAN | 1.00 | .99 | .97 | .97 | .99 | .99 | .99 | .99 | .96 | .95 | 1.54 | 1.48 | 1.82 | .92 | .71 | .90 | .84 | 1.42 | .89 | .79 | .69 |
| SD | .06 | .08 | .17 | .18 | .11 | .09 | .09 | .10 | .21 | .23 | .69 | .60 | .47 | .27 | .45 | .30 | .37 | 1.04 | .31 | .41 | .47 |
| CORR(i,T) | .26 | .21 | .46 | .43 | .30 | .25 | .28 | .26 | .25 | .25 | .53 | .55 | .48 | .48 | .34 | .38 | .44 | .59 | .47 | .42 | .43 |

TOTAL TEST: MEAN = 21.80 SD = 3.02 ALPHA = .67

NUMBER OF SUBJECTS: 559

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, MATHEMATICS ASSESSMENT 5

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .39 | .11 | .08 | .03 | .17 | -.03 | .07 | .11 | .19 | .11 | -.04 | -.05 | -.04 | -.05 | .07 | .08 | -.01 | -.03 | -.03 | .04 | .04 | .03 | .14 |
| 2 | .39 | 1.00 | .17 | .12 | .07 | .14 | -.03 | -.04 | .10 | .17 | .06 | -.01 | .03 | .06 | .06 | .04 | .05 | -.00 | .03 | .01 | .07 | .03 | .05 | .12 |
| 3 | .11 | .17 | 1.00 | .25 | .07 | .22 | .03 | .13 | .08 | .16 | .16 | .15 | .07 | .10 | .04 | .05 | -.02 | .07 | .07 | .21 | .14 | .10 | .21 | .05 |
| 4 | .08 | .12 | .25 | 1.00 | .06 | .10 | .04 | .17 | .14 | .18 | .10 | .10 | .14 | .02 | .14 | .14 | .00 | .06 | .09 | .12 | .05 | .20 | .18 | .12 |
| 5 | .03 | .07 | .07 | .06 | 1.00 | .16 | .12 | .10 | .14 | .05 | .01 | -.02 | .03 | .04 | .02 | .15 | .01 | -.04 | .15 | .12 | .09 | .11 | .12 | .19 |
| 6 | .17 | .14 | .22 | .10 | .16 | 1.00 | -.03 | .29 | .12 | .10 | .03 | .04 | .05 | .09 | .13 | .10 | -.05 | .06 | .18 | .20 | .17 | .10 | .14 | .24 |
| 7 | -.03 | -.03 | .03 | .04 | .12 | -.03 | 1.00 | .10 | .05 | .04 | -.04 | .03 | .00 | .06 | -.03 | .11 | -.01 | .02 | .10 | .18 | .08 | .05 | .07 | .05 |
| 8 | .07 | -.04 | .13 | .17 | .10 | .29 | .10 | 1.00 | .01 | .03 | .09 | .15 | .12 | .02 | .08 | .13 | -.05 | .03 | .19 | .21 | .14 | .05 | .13 | .15 |
| 9 | .11 | .10 | .08 | .14 | .14 | .12 | .05 | .01 | 1.00 | .35 | .20 | .13 | .08 | .13 | -.02 | .04 | -.02 | -.03 | .08 | .10 | .03 | .17 | .18 | .10 |
| 10 | .19 | .17 | .16 | .18 | .05 | .10 | .04 | .03 | .35 | 1.00 | .16 | .21 | .13 | .16 | .07 | .11 | -.01 | .07 | .03 | .04 | .01 | .15 | .10 | .17 |
| 11 | .11 | .06 | .16 | .10 | .01 | .03 | -.04 | .09 | .20 | .16 | 1.00 | .61 | .12 | .12 | .04 | .07 | .03 | -.01 | .00 | .00 | .03 | .02 | .03 | .06 |
| 12 | -.04 | -.01 | .15 | .10 | -.02 | .04 | .03 | .15 | .13 | .21 | .61 | 1.00 | .12 | .18 | .12 | .11 | -.04 | .04 | .03 | .03 | .00 | -.03 | .03 | .08 |
| 13 | -.05 | .03 | .07 | .14 | .03 | .05 | .00 | .12 | .08 | .13 | .12 | .12 | 1.00 | .54 | .35 | .23 | .05 | .15 | .02 | .02 | -.02 | .10 | .01 | .10 |
| 14 | -.04 | .06 | .10 | .02 | .04 | .09 | .06 | .02 | .13 | .16 | .12 | .18 | .54 | 1.00 | .46 | .31 | .06 | .24 | -.01 | .03 | -.00 | .07 | .02 | .05 |
| 15 | -.05 | .06 | .04 | .14 | .02 | .13 | -.03 | .08 | -.02 | .07 | .04 | .12 | .35 | .46 | 1.00 | .22 | .05 | .22 | .01 | .01 | -.00 | .05 | .01 | .13 |
| 16 | .07 | .04 | .05 | .14 | .15 | .10 | .11 | .13 | .04 | .11 | .07 | .11 | .23 | .31 | .22 | 1.00 | .00 | .15 | .11 | .11 | .07 | .14 | .16 | .20 |
| 17 | .08 | .05 | -.02 | .00 | .01 | -.05 | -.01 | -.05 | -.02 | -.01 | .03 | -.04 | .05 | .06 | .05 | .00 | 1.00 | -.09 | -.04 | -.01 | .03 | .16 | .05 | .01 |
| 18 | -.01 | -.00 | .07 | .06 | -.04 | .06 | .02 | .03 | -.03 | .07 | -.01 | .04 | .15 | .24 | .22 | .15 | -.09 | 1.00 | .01 | .04 | .04 | .09 | .04 | .05 |
| 19 | -.03 | .03 | .07 | .09 | .15 | .18 | .10 | .19 | .08 | .03 | .00 | .03 | .02 | -.01 | .01 | .11 | -.04 | .01 | 1.00 | .54 | .48 | .13 | .20 | .13 |
| 20 | -.03 | .01 | .21 | .12 | .12 | .20 | .18 | .21 | .10 | .04 | .00 | .03 | .02 | .03 | .01 | .11 | -.01 | .04 | .54 | 1.00 | .54 | .15 | .29 | .19 |
| 21 | .04 | .07 | .14 | .05 | .09 | .17 | .08 | .14 | .03 | .01 | .03 | .00 | -.02 | -.00 | -.00 | .07 | .03 | .04 | .48 | .54 | 1.00 | .09 | .22 | .19 |
| 22 | .04 | .03 | .10 | .20 | .11 | .10 | .05 | .05 | .17 | .15 | .02 | -.03 | .10 | .07 | .05 | .14 | .16 | .09 | .13 | .15 | .09 | 1.00 | .47 | .15 |
| 23 | .03 | .05 | .21 | .18 | .12 | .14 | .07 | .13 | .18 | .10 | .03 | .03 | .01 | .02 | .01 | .16 | .05 | .04 | .20 | .29 | .22 | .47 | 1.00 | .22 |
| 24 | .14 | .12 | .05 | .12 | .19 | .24 | .05 | .15 | .10 | .17 | .06 | .08 | .10 | .05 | .13 | .20 | .01 | .05 | .13 | .19 | .19 | .15 | .22 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 |
| MEAN | .98 | .98 | .86 | .80 | .94 | .78 | .95 | .93 | .91 | .93 | .86 | .89 | .89 | .92 | .87 | .68 | .26 | .63 | .95 | .93 | .88 | .99 | 1.27 | 1.36 |
| SD | .13 | .14 | .35 | .40 | .24 | .41 | .21 | .26 | .28 | .25 | .35 | .31 | .32 | .27 | .33 | .46 | .44 | .48 | .22 | .25 | .32 | .77 | .77 | 1.07 |
| CORR(i,T) | .18 | .21 | .37 | .41 | .28 | .41 | .17 | .33 | .33 | .36 | .28 | .29 | .35 | .36 | .33 | .45 | .16 | .27 | .34 | .43 | .37 | .54 | .58 | .59 |

TOTAL TEST: MEAN = 21.46 SD = 3.59 ALPHA = .68

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NUMBER OF SUBJECTS: 549

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, MATHEMATICS ASSESSMENT 6

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .37 | .43 | .26 | .25 | .23 | .19 | .22 | .29 | .30 | .19 | .17 |
| 2 | .37 | 1.00 | .59 | .28 | .27 | .24 | .24 | .19 | .22 | .30 | .19 | .11 |
| 3 | .43 | .59 | 1.00 | .40 | .34 | .30 | .23 | .20 | .20 | .25 | .19 | .16 |
| 4 | .26 | .28 | .40 | 1.00 | .60 | .40 | .33 | .34 | .18 | .22 | .17 | .28 |
| 5 | .25 | .27 | .34 | .60 | 1.00 | .29 | .32 | .33 | .24 | .23 | .14 | .25 |
| 6 | .23 | .24 | .30 | .40 | .29 | 1.00 | .62 | .58 | .26 | .20 | .24 | .26 |
| 7 | .19 | .24 | .23 | .33 | .32 | .62 | 1.00 | .69 | .29 | .20 | .25 | .23 |
| 8 | .22 | .19 | .20 | .34 | .33 | .58 | .69 | 1.00 | .33 | .25 | .29 | .30 |
| 9 | .29 | .22 | .20 | .18 | .24 | .26 | .29 | .33 | 1.00 | .59 | .41 | .23 |
| 10 | .30 | .30 | .25 | .22 | .23 | .20 | .20 | .25 | .59 | 1.00 | .48 | .27 |
| 11 | .19 | .19 | .19 | .17 | .14 | .24 | .25 | .29 | .41 | .48 | 1.00 | .36 |
| 12 | .17 | .11 | .16 | .28 | .25 | .26 | .23 | .30 | .23 | .27 | .36 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 3 |
| MEAN | .84 | .69 | .80 | 1.85 | 1.80 | .95 | .89 | .88 | .69 | .98 | .88 | 2.22 |
| SD | .37 | .46 | .40 | .51 | .58 | .23 | .32 | .33 | .46 | .96 | .74 | 1.00 |
| CORR(i,T) | .50 | .52 | .55 | .59 | .58 | .54 | .54 | .58 | .62 | .69 | .63 | .61 |

TOTAL TEST: MEAN = 13.46 SD = 3.79 ALPHA = .78

NUMBER OF SUBJECTS: 545

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, MATHEMATICS ASSESSMENT 7

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .40 | .41 | .15 | .08 | .03 | .05 | .06 | .16 | .02 | .07 | .00 | .00 |
| 2 | .40 | 1.00 | .24 | .07 | .13 | .00 | .01 | .03 | .09 | .06 | .00 | -.02 | .04 |
| 3 | .41 | .24 | 1.00 | .06 | .10 | .09 | .09 | .12 | .11 | .04 | .05 | .01 | -.03 |
| 4 | .15 | .07 | .06 | 1.00 | .12 | .00 | .10 | .14 | .16 | .11 | .14 | .17 | .00 |
| 5 | .08 | .13 | .10 | .12 | 1.00 | .18 | .19 | .24 | .21 | .05 | .28 | .16 | .05 |
| 6 | .03 | .00 | .09 | .00 | .18 | 1.00 | .04 | .07 | .18 | -.00 | .22 | .14 | -.03 |
| 7 | .05 | .01 | .09 | .10 | .19 | .04 | 1.00 | .42 | .22 | -.06 | .10 | .12 | -.05 |
| 8 | .06 | .03 | .12 | .14 | .24 | .07 | .42 | 1.00 | .29 | .10 | .18 | .10 | -.02 |
| 9 | .16 | .09 | .11 | .16 | .21 | .18 | .22 | .29 | 1.00 | .09 | .21 | .11 | .06 |
| 10 | .02 | .06 | .04 | .11 | .05 | -.00 | -.06 | .10 | .09 | 1.00 | .15 | .03 | .09 |
| 11 | .07 | .00 | .05 | .14 | .28 | .22 | .10 | .18 | .21 | .15 | 1.00 | .23 | .03 |
| 12 | .00 | -.02 | .01 | .17 | .16 | .14 | .12 | .10 | .11 | .03 | .23 | 1.00 | .01 |
| 13 | .00 | .04 | -.03 | .00 | .05 | -.03 | -.05 | -.02 | .06 | .09 | .03 | .01 | 1.00 |
| MAX SCORE | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 |
| MEAN | 2.92 | 1.93 | 1.97 | .97 | .72 | .89 | .96 | .94 | .94 | 2.74 | 1.99 | 2.51 | 2.89 |
| SD | .38 | .31 | .22 | .20 | .45 | .32 | .19 | .24 | .26 | .70 | 1.27 | .85 | .44 |
| CORR(I,T) | .32 | .25 | .27 | .32 | .50 | .33 | .26 | .38 | .42 | .40 | .74 | .52 | .21 |

TOTAL TEST: MEAN = 22.36 SD = 2.65 ALPHA = .50

NUMBER OF SUBJECTS: 587

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, MATHEMATICS ASSESSMENT 8

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .83 | .17 | .17 | .46 | .56 | .16 | .20 | .12 | .19 | .10 | .15 | .16 | .19 | .16 | .20 | .20 |
| 2 | .83 | 1.00 | .19 | .28 | .53 | .61 | .20 | .21 | .10 | .14 | .13 | .14 | .12 | .16 | .18 | .25 | .23 |
| 3 | .17 | .19 | 1.00 | .19 | .51 | .17 | .04 | .09 | .12 | .14 | .17 | .06 | .05 | -.02 | .15 | .13 | .07 |
| 4 | .17 | .28 | .19 | 1.00 | .18 | .26 | .15 | .02 | .12 | .01 | .03 | -.00 | .03 | .06 | .06 | -.01 | .06 |
| 5 | .46 | .53 | .51 | .18 | 1.00 | .76 | .16 | .26 | .16 | .25 | .22 | .13 | .13 | .14 | .25 | .23 | .21 |
| 6 | .56 | .61 | .17 | .2[illegible] | .76 | 1.00 | .19 | .23 | .12 | .18 | .16 | .14 | .13 | .13 | .21 | .19 | .23 |
| 7 | .16 | .20 | .04 | .15 | .16 | .19 | 1.00 | .29 | .14 | .15 | .15 | .21 | .20 | .05 | .16 | .07 | .15 |
| 8 | .20 | .21 | .09 | .02 | .26 | .23 | .29 | 1.00 | .16 | .17 | .18 | .25 | .21 | .04 | .26 | .16 | .22 |
| 9 | .12 | .10 | .12 | .12 | .16 | .12 | .14 | .16 | 1.00 | .69 | .13 | .33 | .29 | .06 | .26 | .10 | .21 |
| 10 | .19 | .14 | .14 | .01 | .25 | .18 | .15 | .17 | .69 | 1.00 | .16 | .35 | .36 | .07 | .35 | .15 | .21 |
| 11 | .10 | .13 | .17 | .03 | .22 | .16 | .15 | .18 | .13 | .16 | 1.00 | .16 | .10 | .04 | .19 | .10 | .15 |
| 12 | .15 | .14 | .06 | -.00 | .13 | .14 | .21 | .25 | .33 | .35 | .16 | 1.00 | .71 | .12 | .32 | .16 | .21 |
| 13 | .16 | .12 | .05 | .03 | .13 | .13 | .20 | .21 | .29 | .36 | .10 | .71 | 1.00 | .20 | .31 | .11 | .21 |
| 14 | .19 | .16 | -.02 | .06 | .14 | .13 | .05 | .04 | .06 | .07 | .04 | .12 | .20 | 1.00 | .09 | .10 | .14 |
| 15 | .16 | .18 | .15 | .06 | .25 | .21 | .16 | .26 | .26 | .35 | .19 | .32 | .31 | .09 | 1.00 | .11 | .26 |
| 16 | .20 | .25 | .13 | -.01 | .23 | .19 | .07 | .16 | .10 | .15 | .10 | .16 | .11 | .10 | .11 | 1.00 | .34 |
| 17 | .20 | .23 | .07 | .06 | .21 | .23 | .15 | .22 | .21 | .21 | .15 | .21 | .21 | .14 | .26 | .34 | 1.00 |
| MAX SCORE | 3 | 3 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| MEAN | 2.80 | 2.78 | .96 | .99 | 1.75 | 1.81 | .86 | 1.00 | 1.17 | 1.05 | .87 | .48 | .46 | .93 | 1.45 | 1.67 | 1.16 |
| SD | .52 | .53 | .20 | .08 | .58 | .49 | .35 | .95 | .67 | .76 | .34 | .50 | .50 | .26 | .64 | .60 | .90 |
| CORR(i,T) | .57 | .60 | .30 | .19 | .63 | .60 | .38 | .55 | .53 | .60 | .34 | .55 | .52 | .25 | .55 | .43 | .56 |

TOTAL TEST: MEAN = 22.19 SD = 4.65 ALPHA = .79

NUMBER OF SUBJECTS: 573

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, WRITING ASSESSMENT 1

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .53 |
| 2 | .53 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.36 | 2.71 |
| SD | .98 | .98 |
| CORR(I,T) | .88 | .88 |

TOTAL TEST: MEAN = 5.08 SD = 1.72 ALPHA = .69

NUMBER OF SUBJECTS: 588

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, WRITING ASSESSMENT 2

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .55 |
| 2 | .55 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.39 | 2.60 |
| SD | .89 | .98 |
| CORR(I,T) | .87 | .89 |

TOTAL TEST: MEAN = 4.98 SD = 1.64 ALPHA = .71

NUMBER OF SUBJECTS: 620

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, WRITING ASSESSMENT 3

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .52 |
| 2 | .52 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.72 | 3.01 |
| SD | .97 | .95 |
| CORR(I,T) | .87 | .87 |

TOTAL TEST: MEAN = 5.73 SD = 1.67 ALPHA = .68

NUMBER OF SUBJECTS: 513

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, WRITING ASSESSMENT 4

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .46 |
| 2 | .46 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.26 | 2.91 |
| SD | 1.01 | .94 |
| CORR(I,T) | .87 | .84 |

TOTAL TEST: MEAN = 5.17 SD = 1.67 ALPHA = .63

NUMBER OF SUBJECTS: 644

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 3, WRITING ASSESSMENT 5

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .48 |
| 2 | .48 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.29 | 3.13 |
| SD | .85 | 1.01 |
| CORR(I,T) | .83 | .89 |

TOTAL TEST: MEAN = 5.42 SD = 1.60 ALPHA = .64

NUMBER OF SUBJECTS: 579

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, READING ASSESSMENT 1

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .38 | .20 | .16 | .17 | .16 | .07 | .16 | .10 | .14 | .11 | .14 | .18 | .39 |
| 2 | .38 | 1.00 | .13 | .10 | .13 | .09 | .07 | .06 | .15 | .11 | .10 | .03 | .16 | .34 |
| 3 | .20 | .13 | 1.00 | .32 | .35 | .66 | .36 | .23 | .19 | .17 | .16 | .00 | .26 | .20 |
| 4 | .16 | .10 | .32 | 1.00 | .42 | .27 | .24 | .16 | .14 | .09 | .11 | -.02 | .21 | .13 |
| 5 | .17 | .13 | .35 | .42 | 1.00 | .44 | .43 | .23 | .24 | .12 | .19 | -.02 | .26 | .23 |
| 6 | .16 | .09 | .66 | .27 | .44 | 1.00 | .46 | .24 | .17 | .16 | .12 | -.01 | .22 | .19 |
| 7 | .07 | .07 | .36 | .24 | .43 | .46 | 1.00 | .17 | .20 | .06 | .08 | -.02 | .16 | .17 |
| 8 | .16 | .06 | .23 | .16 | .23 | .24 | .17 | 1.00 | .28 | .27 | .20 | -.01 | .38 | .27 |
| 9 | .10 | .15 | .19 | .14 | .24 | .17 | .20 | .28 | 1.00 | .20 | .16 | -.14 | .28 | .27 |
| 10 | .14 | .11 | .17 | .09 | .12 | .16 | .06 | .27 | .20 | 1.00 | .36 | .13 | .26 | .20 |
| 11 | .11 | .10 | .16 | .11 | .19 | .12 | .08 | .20 | .16 | .36 | 1.00 | .05 | .42 | .25 |
| 12 | .14 | .03 | .00 | -.02 | -.02 | -.01 | -.02 | -.01 | -.14 | .13 | .05 | 1.00 | .11 | .11 |
| 13 | .18 | .16 | .26 | .21 | .26 | .22 | .16 | .38 | .28 | .26 | .42 | .11 | 1.00 | .29 |
| 14 | .39 | .34 | .20 | .13 | .23 | .19 | .17 | .27 | .27 | .20 | .25 | .11 | .29 | 1.00 |
| MAX SCORE | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 |
| MEAN | 1.69 | 1.63 | .83 | .95 | .87 | .80 | .88 | .66 | .88 | .73 | .78 | .20 | .73 | 2.21 |
| SD | .77 | .77 | .38 | .21 | .33 | .40 | .33 | .47 | .32 | .44 | .42 | .40 | .44 | 1.04 |
| CORR(I,T) | .60 | .53 | .53 | .37 | .51 | .51 | .40 | .50 | .42 | .45 | .45 | .20 | .57 | .72 |

TOTAL TEST: MEAN = 13.85 SD = 3.48 ALPHA = .73

NUMBER OF SUBJECTS: 537

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, READING ASSESSMENT 2

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .08 | .28 | .23 | .19 | .16 | .16 | .14 | .23 | .19 | .08 | .20 |
| 2 | .08 | 1.00 | .12 | .03 | .05 | .07 | .02 | .04 | .10 | .10 | .08 | .08 |
| 3 | .28 | .12 | 1.00 | .27 | .21 | .17 | .19 | .12 | .21 | .17 | .16 | .16 |
| 4 | .23 | .03 | .27 | 1.00 | .20 | .26 | .30 | .12 | .19 | .22 | .19 | .13 |
| 5 | .19 | .05 | .21 | .20 | 1.00 | .17 | .12 | .12 | .16 | .16 | .13 | .22 |
| 6 | .16 | .07 | .17 | .26 | .17 | 1.00 | .43 | .13 | .10 | .11 | .12 | .13 |
| 7 | .16 | .02 | .19 | .30 | .12 | .43 | 1.00 | .10 | .11 | .19 | .16 | .17 |
| 8 | .14 | .04 | .12 | .12 | .12 | .13 | .10 | 1.00 | .25 | .18 | .16 | .16 |
| 9 | .23 | .10 | .21 | .19 | .16 | .10 | .11 | .25 | 1.00 | .33 | .14 | .18 |
| 10 | .19 | .10 | .17 | .22 | .16 | .11 | .19 | .18 | .33 | 1.00 | .20 | .23 |
| 11 | .08 | .08 | .16 | .19 | .13 | .12 | .16 | .16 | .14 | .20 | 1.00 | .19 |
| 12 | .20 | .08 | .16 | .13 | .22 | .13 | .17 | .16 | .18 | .23 | .19 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 4 | 4 | 3 |
| MEAN | .83 | .59 | .59 | .70 | .52 | .90 | .88 | 3.30 | 1.99 | 2.72 | 1.67 | 1.31 |
| SD | .38 | .49 | .49 | .46 | .50 | .30 | .33 | 1.04 | 1.29 | 1.26 | 1.17 | .69 |
| CORR(i,T) | .41 | .26 | .44 | .45 | .40 | .34 | .37 | .52 | .64 | .64 | .53 | .48 |

TOTAL TEST: MEAN = 16.01 SD = 4.26 ALPHA = .64

NUMBER OF SUBJECTS: 646

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, READING ASSESSMENT 3

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .18 | .63 | .18 | .08 | .14 | .15 | .15 | .23 | .08 | .07 | .19 | .02 | .06 | .20 | .13 | .09 |
| 2 | .18 | 1.00 | .11 | .24 | .14 | .13 | .05 | .09 | .12 | .02 | .13 | .08 | .05 | .04 | .07 | .05 | .06 |
| 3 | .63 | .11 | 1.00 | .26 | .21 | .15 | .15 | .14 | .16 | .12 | .13 | .14 | .06 | .04 | .19 | .08 | .14 |
| 4 | .18 | .24 | .26 | 1.00 | .28 | .11 | .13 | .15 | .09 | .10 | .10 | .15 | .06 | .12 | .10 | .05 | .10 |
| 5 | .08 | .14 | .21 | .28 | 1.00 | .11 | .07 | .23 | .03 | .12 | .03 | .10 | .14 | .07 | .03 | .07 | .04 |
| 6 | .14 | .13 | .15 | .11 | .11 | 1.00 | .19 | .15 | .18 | .17 | .13 | .10 | .13 | .11 | .06 | .10 | .19 |
| 7 | .15 | .05 | .15 | .13 | .07 | .19 | 1.00 | .12 | .22 | .10 | .19 | .11 | .04 | .06 | .10 | .09 | .16 |
| 8 | .15 | .09 | .14 | .15 | .23 | .15 | .12 | 1.00 | .09 | .10 | .07 | .12 | .03 | .13 | .14 | .17 | .05 |
| 9 | .23 | .12 | .16 | .09 | .03 | .18 | .22 | .09 | 1.00 | .21 | .36 | .24 | .16 | .09 | .12 | .19 | .05 |
| 10 | .08 | .02 | .12 | .10 | .12 | .17 | .10 | .10 | .21 | 1.00 | .07 | .06 | .08 | .18 | .08 | .07 | .02 |
| 11 | .07 | .13 | .13 | .10 | .03 | .13 | .19 | .07 | .36 | .07 | 1.00 | .27 | .25 | .05 | .12 | .14 | .09 |
| 12 | .19 | .08 | .14 | .15 | .10 | .10 | .11 | .12 | .24 | .06 | .27 | 1.00 | .12 | .04 | .17 | .13 | .09 |
| 13 | .02 | .05 | .06 | .06 | .14 | .13 | .04 | .03 | .16 | .08 | .25 | .12 | 1.00 | .07 | .14 | .18 | .16 |
| 14 | .06 | .04 | .04 | .12 | .07 | .11 | .06 | .13 | .09 | .18 | .05 | .04 | .07 | 1.00 | .22 | .07 | -.03 |
| 15 | .20 | .07 | .19 | .10 | .03 | .06 | .10 | .14 | .12 | .08 | .12 | .17 | .14 | .22 | 1.00 | .36 | .04 |
| 16 | .13 | .05 | .08 | .05 | .07 | .10 | .09 | .17 | .19 | .07 | .14 | .13 | .18 | .07 | .36 | 1.00 | .09 |
| 17 | .09 | .06 | .14 | .10 | .04 | .19 | .16 | .05 | .05 | .02 | .09 | .09 | .16 | -.03 | .04 | .09 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 3 | 5 | 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 |
| MEAN | .85 | .98 | .89 | .91 | .98 | 1.99 | 4.12 | 3.22 | .96 | .76 | .96 | .92 | .89 | .39 | .62 | .83 | 2.54 |
| SD | .35 | .15 | .32 | .30 | .14 | .85 | 1.00 | .82 | .22 | .43 | .20 | .27 | .32 | .49 | .49 | .37 | 1.11 |
| CORR(i,T) | .43 | .24 | .44 | .36 | .28 | .54 | .55 | .47 | .39 | .34 | .34 | .34 | .31 | .31 | .41 | .38 | .51 |

TOTAL TEST: MEAN = 22.81 SD = 3.41 ALPHA = .61

NUMBER OF SUBJECTS: 627

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, READING ASSESSMENT 4

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .35 | .54 | .42 | .44 | .13 | .07 | .14 | .12 | .06 | .19 | .15 |
| 2 | .35 | 1.00 | .26 | .36 | .29 | .21 | .10 | .14 | .16 | .17 | .20 | .15 |
| 3 | .54 | .26 | 1.00 | .36 | .37 | .16 | .09 | .08 | .10 | .08 | .24 | .19 |
| 4 | .42 | .36 | .36 | 1.00 | .31 | .25 | .11 | .08 | .18 | .11 | .27 | .24 |
| 5 | .44 | .29 | .37 | .31 | 1.00 | .18 | .07 | .10 | .19 | .05 | .22 | .18 |
| 6 | .13 | .21 | .16 | .25 | .18 | 1.00 | .18 | .19 | .24 | .27 | .32 | .26 |
| 7 | .07 | .10 | .09 | .11 | .07 | .18 | 1.00 | .15 | .23 | .20 | .23 | .13 |
| 8 | .14 | .14 | .08 | .08 | .10 | .19 | .15 | 1.00 | .34 | .28 | .22 | .17 |
| 9 | .12 | .16 | .10 | .18 | .19 | .24 | .23 | .34 | 1.00 | .28 | .25 | .21 |
| 10 | .06 | .17 | .08 | .11 | .05 | .27 | .20 | .28 | .28 | 1.00 | .16 | .14 |
| 11 | .19 | .20 | .24 | .27 | .22 | .32 | .23 | .22 | .25 | .16 | 1.00 | .45 |
| 12 | .15 | .15 | .19 | .24 | .18 | .26 | .13 | .17 | .21 | .14 | .45 | 1.00 |
| MAX SCORE | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 4 | 4 |
| MEAN | 1.77 | 1.29 | 1.59 | 1.47 | 1.36 | .33 | .77 | .82 | .73 | .53 | 2.41 | 2.19 |
| SD | .45 | .60 | .55 | .62 | .62 | .47 | .42 | .41 | .45 | .52 | .93 | .91 |
| CORR(i,T) | .54 | .53 | .55 | .59 | .54 | .52 | .36 | .41 | .48 | .41 | .67 | .61 |

TOTAL TEST: MEAN = 15.26 SD = 3.74 ALPHA = .75

NUMBER OF SUBJECTS: 598

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, READING ASSESSMENT 5

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | -.00 | .07 | .02 | -.06 | .06 | -.00 | -.01 | .02 | .01 | .02 | .04 | -.06 | -.04 | .01 | -.04 |
| 2 | -.00 | 1.00 | .12 | .03 | .01 | -.01 | .04 | .03 | -.04 | .02 | .00 | -.02 | -.05 | .07 | .04 | .03 |
| 3 | .07 | .12 | 1.00 | .22 | .09 | .14 | .13 | .11 | .02 | -.01 | -.02 | .07 | .07 | .10 | .16 | .34 |
| 4 | .02 | .03 | .22 | 1.00 | .22 | .12 | .28 | .10 | .01 | .10 | -.02 | .09 | .03 | -.03 | .10 | .19 |
| 5 | -.06 | .01 | .09 | .22 | 1.00 | .02 | .23 | .17 | .10 | -.03 | .12 | .06 | .06 | .08 | .20 | .15 |
| 6 | .06 | -.01 | .14 | .12 | .02 | 1.00 | .13 | .04 | .02 | -.00 | .12 | .00 | .04 | .13 | -.02 | .06 |
| 7 | -.00 | .04 | .13 | .28 | .23 | .13 | 1.00 | .12 | .02 | -.01 | .04 | .12 | .08 | -.08 | .09 | .16 |
| 8 | -.01 | .03 | .11 | .10 | .17 | .04 | .12 | 1.00 | .02 | .04 | .07 | .03 | .11 | .09 | .06 | .11 |
| 9 | .02 | -.04 | .02 | .01 | .10 | .02 | .02 | .02 | 1.00 | -.18 | .05 | .04 | .13 | .00 | .09 | -.01 |
| 10 | .01 | .02 | -.01 | .10 | -.03 | -.00 | -.01 | .04 | -.18 | 1.00 | -.03 | -.00 | .05 | -.02 | .01 | .02 |
| 11 | .02 | .00 | -.02 | -.02 | .12 | .12 | .04 | .07 | .05 | -.03 | 1.00 | .11 | .03 | .09 | -.03 | -.01 |
| 12 | .04 | -.02 | .07 | .09 | .06 | .00 | .12 | .03 | .04 | -.00 | .11 | 1.00 | .17 | -.01 | .03 | .08 |
| 13 | -.06 | -.05 | .07 | .03 | .06 | .04 | .08 | .11 | .13 | .05 | .03 | .17 | 1.00 | .00 | .08 | .13 |
| 14 | -.04 | .07 | .10 | -.03 | .08 | .13 | -.08 | .09 | .00 | -.02 | .09 | -.01 | .00 | 1.00 | .05 | .06 |
| 15 | .01 | .04 | .16 | .10 | .20 | -.02 | .09 | .06 | .09 | .01 | -.03 | .03 | .08 | .05 | 1.00 | .30 |
| 16 | -.04 | .03 | .34 | .19 | .15 | .06 | .16 | .11 | -.01 | .02 | -.01 | .08 | .13 | .06 | .30 | 1.00 |
| MAX SCORE | 2 | 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 4 |
| MEAN | .90 | 3.72 | 2.25 | .94 | .77 | .64 | .88 | .78 | .70 | .42 | .45 | .75 | .52 | .64 | 2.03 | 2.18 |
| SD | .60 | .90 | .86 | .24 | .42 | .48 | .32 | .41 | .46 | .49 | .50 | .43 | .50 | .49 | .85 | .90 |
| CORR(i,T) | .20 | .35 | .57 | .35 | .37 | .29 | .33 | .32 | .19 | .15 | .23 | .27 | .31 | .27 | .50 | .57 |

TOTAL TEST: MEAN = 18.56 SD = 3.16 ALPHA = .47

NUMBER OF SUBJECTS: 615

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, READING ASSESSMENT 6

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .10 | .29 | .15 | .26 | .22 | .16 | .35 |
| 2 | .10 | 1.00 | .06 | .17 | .18 | .21 | .19 | .30 |
| 3 | .29 | .06 | 1.00 | .19 | .23 | .21 | .19 | .28 |
| 4 | .15 | .17 | .19 | 1.00 | .49 | .23 | .37 | .28 |
| 5 | .26 | .18 | .23 | .49 | 1.00 | .36 | .40 | .30 |
| 6 | .22 | .21 | .21 | .23 | .36 | 1.00 | .26 | .31 |
| 7 | .16 | .19 | .19 | .37 | .40 | .26 | 1.00 | .28 |
| 8 | .35 | .30 | .28 | .28 | .30 | .31 | .28 | 1.00 |
| MAX SCORE | 5 | 1 | 5 | 2 | 2 | 2 | 2 | 4 |
| MEAN | 2.17 | .56 | 3.54 | .92 | .83 | 1.24 | .62 | 1.99 |
| SD | 1.27 | .50 | 1.27 | .86 | .83 | .75 | .65 | .90 |
| CORR(I,T) | .63 | .37 | .61 | .58 | .66 | .56 | .55 | .66 |

TOTAL TEST: MEAN = 11.88 SD = 4.19 ALPHA = .70

NUMBER OF SUBJECTS: 496

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, READING ASSESSMENT 7

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | -.02 | .18 | .06 | .06 | .23 | .07 | .04 | .01 | .03 | .01 | .14 | .04 | .08 | .02 | -.00 | .01 | .06 |
| 2 | -.02 | 1.00 | .00 | -.02 | .01 | .05 | .06 | -.03 | -.01 | .03 | -.04 | .02 | .00 | -.04 | -.04 | .03 | .00 | -.02 |
| 3 | .18 | .00 | 1.00 | -.01 | .10 | .30 | .06 | .16 | .11 | .15 | .14 | .15 | .08 | .10 | .07 | .15 | .12 | .18 |
| 4 | .06 | -.02 | -.01 | 1.00 | .07 | .15 | .09 | .02 | .06 | .05 | .03 | .05 | .11 | .06 | .04 | .02 | .07 | .09 |
| 5 | .06 | .01 | .10 | .07 | 1.00 | .11 | -.01 | .11 | .05 | .07 | .07 | .05 | .06 | .09 | .03 | .08 | .10 | .09 |
| 6 | .23 | .05 | .30 | .15 | .11 | 1.00 | .07 | .18 | .14 | .15 | .15 | .12 | .13 | .11 | -.02 | .07 | .13 | .14 |
| 7 | .07 | .06 | .06 | .09 | -.01 | .07 | 1.00 | .12 | .18 | .09 | .14 | .13 | .01 | .10 | .17 | .14 | .12 | .12 |
| 8 | .04 | -.03 | .16 | .02 | .11 | .18 | .12 | 1.00 | .23 | .22 | .28 | .14 | .17 | .13 | .10 | .18 | .15 | .23 |
| 9 | .01 | -.01 | .11 | .06 | .05 | .14 | .18 | .23 | 1.00 | .26 | .20 | .11 | .15 | .09 | .04 | .22 | .17 | .23 |
| 10 | .03 | .03 | .15 | .05 | .07 | .15 | .09 | .22 | .26 | 1.00 | .32 | .28 | .30 | .14 | .14 | .19 | .13 | .21 |
| 11 | .01 | -.04 | .14 | .03 | .07 | .15 | .14 | .28 | .20 | .32 | 1.00 | .37 | .45 | .24 | .16 | .20 | .17 | .22 |
| 12 | .14 | .02 | .15 | .05 | .05 | .12 | .13 | .14 | .11 | .28 | .37 | 1.00 | .26 | .25 | .15 | .16 | .23 | .18 |
| 13 | .04 | .00 | .08 | .11 | .06 | .13 | .01 | .17 | .15 | .30 | .45 | .26 | 1.00 | .28 | .17 | .16 | .08 | .09 |
| 14 | .08 | -.04 | .10 | .06 | .09 | .11 | .10 | .13 | .09 | .14 | .24 | .25 | .28 | 1.00 | .08 | .16 | .08 | .08 |
| 15 | .02 | -.04 | .07 | .04 | .03 | -.02 | .17 | .10 | .04 | .14 | .16 | .15 | .17 | .08 | 1.00 | .08 | .11 | .03 |
| 16 | -.00 | .03 | .15 | .02 | .08 | .07 | .14 | .18 | .22 | .19 | .20 | .16 | .16 | .16 | .08 | 1.00 | .21 | .14 |
| 17 | .01 | .00 | .12 | .07 | .10 | .13 | .12 | .15 | .17 | .13 | .17 | .23 | .08 | .08 | .11 | .21 | 1.00 | .20 |
| 18 | .06 | -.02 | .18 | .09 | .09 | .14 | .12 | .23 | .23 | .21 | .22 | .18 | .09 | .08 | .03 | .14 | .20 | 1.00 |
| MAX SCORE | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 |
| MEAN | 1.90 | .95 | 1.85 | .90 | .90 | 1.84 | .13 | .52 | .63 | 1.52 | 1.63 | 1.52 | 1.48 | 1.07 | .72 | 1.38 | 1.07 | 2.48 |
| SD | .32 | .21 | .38 | .29 | .30 | .45 | .33 | .50 | .49 | .77 | .61 | .58 | .66 | .61 | .68 | .53 | .53 | 1.00 |
| CORR(i,T) | .21 | .04 | .38 | .20 | .23 | .39 | .31 | .47 | .45 | .58 | .61 | .54 | .53 | .43 | .35 | .44 | .42 | .54 |

TOTAL TEST: MEAN = 22.51 SD = 4.06 ALPHA = .71

NUMBER OF SUBJECTS: 599

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, MATHEMATICS ASSESSMENT 1

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .21 | .20 | .07 | .09 | .12 | -.00 | .08 | .19 | .24 | .12 | .17 | .13 | .11 | .16 | .20 | .07 | .19 |
| 2 | .21 | 1.00 | .24 | .01 | .08 | .10 | -.04 | .02 | .13 | .22 | .16 | .15 | .10 | .01 | .06 | .16 | .11 | .13 |
| 3 | .20 | .24 | 1.00 | .03 | .05 | .10 | .06 | .06 | .19 | .23 | .12 | .09 | .13 | .08 | .09 | .16 | .06 | .17 |
| 4 | .07 | .01 | .03 | 1.00 | .82 | .37 | -.02 | -.00 | .09 | .07 | .10 | .04 | .07 | .14 | .08 | .13 | .04 | .09 |
| 5 | .09 | .08 | .05 | .82 | 1.00 | .47 | -.02 | .01 | .15 | .10 | .11 | .07 | .06 | .09 | .14 | .13 | .06 | .12 |
| 6 | .12 | .10 | .10 | .37 | .47 | 1.00 | -.05 | -.01 | .19 | .15 | .04 | .13 | .04 | .08 | .05 | .16 | .12 | .14 |
| 7 | -.00 | -.04 | .06 | -.02 | -.02 | -.05 | 1.00 | .17 | .04 | -.01 | .06 | .04 | .10 | .06 | .01 | .11 | .07 | .05 |
| 8 | .08 | .02 | .06 | -.00 | .01 | -.01 | .17 | 1.00 | .12 | .20 | -.05 | .10 | .11 | -.02 | .06 | .09 | .04 | .09 |
| 9 | .19 | .13 | .19 | .09 | .15 | .19 | .04 | .12 | 1.00 | .32 | .08 | .21 | .18 | .10 | .13 | .24 | .17 | .19 |
| 10 | .24 | .22 | .23 | .07 | .10 | .15 | -.01 | .20 | .32 | 1.00 | .12 | .20 | .21 | .18 | .12 | .18 | .17 | .23 |
| 11 | .12 | .16 | .12 | .10 | .11 | .04 | .06 | -.05 | .08 | .12 | 1.00 | .18 | .08 | .02 | .06 | .10 | .11 | .15 |
| 12 | .17 | .15 | .09 | .04 | .07 | .13 | .04 | .10 | .21 | .20 | .18 | 1.00 | .22 | .05 | .02 | .14 | .04 | .17 |
| 13 | .13 | .10 | .13 | .07 | .06 | .04 | .10 | .11 | .18 | .21 | .08 | .22 | 1.00 | .10 | .10 | .15 | .10 | .15 |
| 14 | .11 | .01 | .08 | .14 | .09 | .08 | .06 | -.02 | .10 | .18 | .02 | .05 | .10 | 1.00 | .24 | .26 | .10 | .16 |
| 15 | .16 | .06 | .09 | .08 | .14 | .05 | .01 | .06 | .13 | .12 | .06 | .02 | .10 | .24 | 1.00 | .30 | .13 | .17 |
| 16 | .20 | .16 | .16 | .13 | .13 | .16 | .11 | .09 | .24 | .18 | .10 | .14 | .15 | .26 | .30 | 1.00 | .20 | .26 |
| 17 | .07 | .11 | .06 | .04 | .06 | .12 | .07 | .04 | .17 | .17 | .11 | .04 | .10 | .10 | .13 | .20 | 1.00 | .12 |
| 18 | .19 | .13 | .17 | .09 | .12 | .14 | .05 | .09 | .19 | .23 | .15 | .17 | .15 | .16 | .17 | .26 | .12 | 1.00 |
| MAX SCORE | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 4 |
| MEAN | .83 | .37 | .47 | .98 | .98 | .92 | .98 | .83 | .63 | .64 | .82 | .47 | .78 | 1.59 | .86 | .73 | .70 | 2.30 |
| SD | .38 | .48 | .82 | .15 | .14 | .27 | .15 | .38 | .48 | .48 | .77 | .50 | .44 | .64 | .36 | .45 | .47 | 1.17 |
| CORR(I,T) | .44 | .40 | .49 | .25 | .29 | .32 | .14 | .23 | .49 | .54 | .41 | .41 | .39 | .39 | .36 | .52 | .36 | .63 |

TOTAL TEST: MEAN = 15.85 SD = 3.75 ALPHA = .67

NUMBER OF SUBJECTS: 523

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, MATHEMATICS ASSESSMENT 2

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .29 | .27 | .23 | .24 | .06 | .15 | .21 | .26 | .19 | .05 | .14 | .14 |
| 2 | .29 | 1.00 | .74 | .23 | .22 | .06 | .21 | .23 | .26 | .20 | .11 | .13 | .22 |
| 3 | .27 | .74 | 1.00 | .23 | .23 | .04 | .25 | .23 | .28 | .20 | .11 | .18 | .19 |
| 4 | .23 | .23 | .23 | 1.00 | .78 | .06 | .19 | .19 | .29 | .28 | .01 | .16 | .19 |
| 5 | .24 | .22 | .23 | .78 | 1.00 | .09 | .17 | .22 | .27 | .28 | .03 | .13 | .20 |
| 6 | .06 | .06 | .04 | .06 | .09 | 1.00 | .27 | .17 | .30 | .13 | .02 | .12 | .12 |
| 7 | .15 | .21 | .25 | .19 | .17 | .27 | 1.00 | .37 | .45 | .29 | .05 | .18 | .21 |
| 8 | .21 | .23 | .23 | .19 | .22 | .17 | .37 | 1.00 | .40 | .24 | .10 | .17 | .17 |
| 9 | .26 | .26 | .28 | .29 | .27 | .30 | .45 | .40 | 1.00 | .29 | .04 | .21 | .23 |
| 10 | .19 | .20 | .20 | .28 | .28 | .13 | .29 | .24 | .29 | 1.00 | .08 | .15 | .28 |
| 11 | .05 | .11 | .11 | .01 | .03 | .02 | .05 | .10 | .04 | .08 | 1.00 | .07 | .11 |
| 12 | .14 | .13 | .18 | .16 | .13 | .12 | .18 | .17 | .21 | .15 | .07 | 1.00 | .39 |
| 13 | .14 | .22 | .19 | .19 | .20 | .12 | .21 | .17 | .23 | .28 | .11 | .39 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 |
| MEAN | .23 | .49 | .39 | .63 | .31 | .80 | .50 | .48 | .49 | .66 | 1.25 | 1.61 | .84 |
| SD | .42 | .50 | .49 | .88 | .46 | .40 | .50 | .50 | .50 | .48 | .91 | .60 | .37 |
| CORR(I,T) | .45 | .57 | .57 | .62 | .60 | .32 | .54 | .53 | .61 | .52 | .36 | .45 | .48 |

TOTAL TEST: MEAN = 8.69 SD = 3.57 ALPHA = .73

NUMBER OF SUBJECTS: 578

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, MATHEMATICS ASSESSMENT 3

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .82 | .17 | .43 | .39 | .25 | .09 | .22 | .25 | .27 | .27 |
| 2 | .82 | 1.00 | .22 | .47 | .40 | .24 | .10 | .21 | .26 | .26 | .26 |
| 3 | .17 | .22 | 1.00 | .70 | .10 | .13 | .08 | .07 | .10 | .19 | .18 |
| 4 | .43 | .47 | .70 | 1.00 | .29 | .14 | .10 | .21 | .23 | .25 | .22 |
| 5 | .39 | .40 | .10 | .29 | 1.00 | .18 | .06 | .21 | .24 | .28 | .28 |
| 6 | .25 | .24 | .13 | .14 | .18 | 1.00 | .12 | .36 | .16 | .15 | .15 |
| 7 | .09 | .10 | .08 | .10 | .06 | .12 | 1.00 | .49 | .11 | .02 | -.01 |
| 8 | .22 | .21 | .07 | .21 | .21 | .36 | .49 | 1.00 | .15 | .07 | .04 |
| 9 | .25 | .26 | .10 | .23 | .24 | .16 | .11 | .15 | 1.00 | .29 | .27 |
| 10 | .27 | .26 | .19 | .25 | .28 | .15 | .02 | .07 | .29 | 1.00 | .77 |
| 11 | .27 | .26 | .18 | .22 | .28 | .15 | -.01 | .04 | .27 | .77 | 1.00 |
| MAX SCORE | 5 | 4 | 1 | 2 | 2 | 3 | 1 | 2 | 3 | 2 | 2 |
| MEAN | 3.91 | 2.88 | .25 | .85 | .92 | 2.37 | .97 | 1.79 | 2.23 | .55 | .59 |
| SD | 1.72 | 1.58 | .44 | .76 | .94 | .89 | .19 | .54 | 1.24 | .84 | .89 |
| CORR(I,T) | .80 | .81 | .38 | .61 | .58 | .44 | .19 | .38 | .53 | .57 | .56 |

TOTAL TEST: MEAN = 17.30 SD = 6.12 ALPHA = .77

NUMBER OF SUBJECTS: 579

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, MATHEMATICS ASSESSMENT 4

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .22 | .20 | .21 | .24 | .15 | .16 | .16 | .19 | .18 | .09 | .07 | .06 | .13 | .16 | .10 | .11 | .15 |
| 2 | .22 | 1.00 | .83 | .36 | .39 | .28 | .29 | .25 | .32 | .18 | .13 | .20 | .14 | .22 | .19 | .20 | .07 | .22 |
| 3 | .20 | .83 | 1.00 | .32 | .38 | .26 | .28 | .24 | .35 | .21 | .18 | .25 | .14 | .26 | .22 | .25 | .09 | .24 |
| 4 | .21 | .36 | .32 | 1.00 | .69 | .31 | .32 | .33 | .23 | .22 | .15 | .23 | .13 | .20 | .18 | .22 | .15 | .27 |
| 5 | .24 | .39 | .38 | .69 | 1.00 | .35 | .42 | .42 | .29 | .32 | .21 | .27 | .12 | .27 | .23 | .23 | .15 | .33 |
| 6 | .15 | .28 | .26 | .31 | .35 | 1.00 | .47 | .50 | .22 | .14 | .14 | .25 | .15 | .19 | .14 | .16 | .08 | .31 |
| 7 | .16 | .29 | .28 | .32 | .42 | .47 | 1.00 | .55 | .21 | .18 | .15 | .23 | .10 | .17 | .20 | .17 | .07 | .26 |
| 8 | .16 | .25 | .24 | .33 | .42 | .50 | .55 | 1.00 | .26 | .25 | .16 | .20 | .12 | .15 | .19 | .21 | .07 | .24 |
| 9 | .19 | .32 | .35 | .23 | .29 | .22 | .21 | .26 | 1.00 | .45 | .20 | .20 | .16 | .26 | .25 | .25 | .16 | .31 |
| 10 | .18 | .18 | .21 | .22 | .32 | .14 | .18 | .25 | .45 | 1.00 | .15 | .14 | .11 | .28 | .22 | .23 | .16 | .26 |
| 11 | .09 | .13 | .18 | .15 | .21 | .14 | .15 | .16 | .20 | .15 | 1.00 | .22 | .08 | .25 | .20 | .16 | .01 | .18 |
| 12 | .07 | .20 | .25 | .23 | .27 | .25 | .23 | .20 | .20 | .14 | .22 | 1.00 | .19 | .23 | .19 | .13 | .06 | .34 |
| 13 | .06 | .14 | .14 | .13 | .12 | .15 | .10 | .12 | .16 | .11 | .08 | .19 | 1.00 | .18 | .23 | .09 | .06 | .25 |
| 14 | .13 | .22 | .26 | .20 | .27 | .19 | .17 | .15 | .26 | .28 | .25 | .23 | .18 | 1.00 | .49 | .23 | .03 | .24 |
| 15 | .16 | .19 | .22 | .18 | .23 | .14 | .20 | .19 | .25 | .22 | .20 | .19 | .23 | .49 | 1.00 | .19 | .08 | .23 |
| 16 | .10 | .20 | .25 | .22 | .23 | .16 | .17 | .21 | .25 | .23 | .16 | .13 | .09 | .23 | .19 | 1.00 | .24 | .16 |
| 17 | .11 | .07 | .09 | .15 | .15 | .08 | .07 | .07 | .16 | .16 | .01 | .06 | .06 | .03 | .08 | .24 | 1.00 | .09 |
| 18 | .15 | .22 | .24 | .27 | .33 | .31 | .26 | .24 | .31 | .26 | .18 | .34 | .25 | .24 | .23 | .16 | .09 | 1.00 |
| MAX SCORE | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 3 |
| MEAN | .71 | .80 | .67 | 1.12 | .93 | .78 | .60 | .50 | .26 | .14 | .33 | 1.02 | .86 | .69 | 1.03 | .28 | .57 | 1.84 |
| SD | .45 | .95 | .92 | .96 | .97 | .41 | .49 | .50 | .44 | .34 | .47 | .63 | .36 | .85 | .89 | .60 | .50 | 1.13 |
| CORR(i,T) | .36 | .64 | .66 | .64 | .72 | .52 | .54 | .53 | .54 | .46 | .37 | .48 | .32 | .54 | .52 | .44 | .25 | .59 |

TOTAL TEST: MEAN = 13.14 SD = 6.40 ALPHA = .83

NUMBER OF SUBJECTS: 538



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CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, MATHEMATICS ASSESSMENT 5

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .25 | .26 | .10 | .04 | .16 | .06 | .23 | .10 | .28 | .29 |
| 2 | .25 | 1.00 | .23 | .19 | .09 | .22 | .04 | .21 | .10 | .25 | .16 |
| 3 | .26 | .23 | 1.00 | .21 | .22 | .29 | .05 | .23 | .14 | .28 | .32 |
| 4 | .10 | .19 | .21 | 1.00 | .10 | .16 | -.05 | .22 | .08 | .18 | .29 |
| 5 | .04 | .09 | .22 | .10 | 1.00 | .19 | -.02 | .14 | .05 | .14 | .16 |
| 6 | .16 | .22 | .29 | .16 | .19 | 1.00 | .07 | .20 | .15 | .24 | .22 |
| 7 | .06 | .04 | .05 | -.05 | -.02 | .07 | 1.00 | .04 | .21 | .02 | .06 |
| 8 | .23 | .21 | .23 | .22 | .14 | .20 | .04 | 1.00 | .21 | .44 | .41 |
| 9 | .10 | .10 | .14 | .08 | .05 | .15 | .21 | .21 | 1.00 | .19 | .12 |
| 10 | .28 | .25 | .28 | .18 | .14 | .24 | .02 | .44 | .19 | 1.00 | .35 |
| 11 | .29 | .16 | .32 | .29 | .16 | .22 | .06 | .41 | .12 | .35 | 1.00 |
| MAX SCORE | 2 | 2 | 4 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 |
| MEAN | 1.32 | 1.10 | .59 | 1.37 | .08 | .78 | .40 | .65 | .31 | .38 | 1.06 |
| SD | .90 | .95 | 1.21 | .85 | .26 | .78 | .49 | .49 | .46 | .49 | .78 |
| CORR(I,T) | .55 | .55 | .67 | .49 | .29 | .54 | .21 | .55 | .35 | .57 | .62 |

TOTAL TEST: MEAN = 8.03 SD = 4.04 ALPHA = .69

NUMBER OF SUBJECTS: 540

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, MATHEMATICS ASSESSMENT 6

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .55 | .58 | .55 | .44 | .46 | .47 | .45 | .24 | .11 | .30 | .27 | .41 | .29 | .24 | .46 |
| 2 | .55 | 1.00 | .75 | .52 | .45 | .42 | .61 | .64 | .24 | .20 | .32 | .30 | .44 | .33 | .25 | .47 |
| 3 | .58 | .75 | 1.00 | .47 | .43 | .46 | .71 | .69 | .24 | .21 | .34 | .36 | .39 | .29 | .25 | .42 |
| 4 | .55 | .52 | .47 | 1.00 | .42 | .54 | .45 | .41 | .18 | .18 | .31 | .29 | .44 | .32 | .22 | .48 |
| 5 | .44 | .45 | .43 | .42 | 1.00 | .71 | .55 | .38 | .17 | .16 | .25 | .22 | .37 | .30 | .22 | .45 |
| 6 | .46 | .42 | .46 | .54 | .71 | 1.00 | .70 | .44 | .21 | .17 | .25 | .25 | .38 | .30 | .23 | .45 |
| 7 | .47 | .61 | .71 | .45 | .55 | .70 | 1.00 | .65 | .19 | .19 | .29 | .31 | .36 | .35 | .24 | .46 |
| 8 | .45 | .64 | .69 | .41 | .38 | .44 | .65 | 1.00 | .15 | .20 | .31 | .32 | .38 | .27 | .26 | .40 |
| 9 | .24 | .24 | .24 | .18 | .17 | .21 | .19 | .15 | 1.00 | .29 | .21 | .14 | .16 | .07 | .19 | .24 |
| 10 | .11 | .20 | .21 | .18 | .16 | .17 | .19 | .20 | .29 | 1.00 | .10 | .10 | .14 | .09 | .19 | .11 |
| 11 | .30 | .32 | .34 | .31 | .25 | .25 | .29 | .31 | .21 | .10 | 1.00 | .53 | .27 | .19 | .31 | .29 |
| 12 | .27 | .30 | .36 | .29 | .22 | .25 | .31 | .32 | .14 | .10 | .53 | 1.00 | .22 | .19 | .30 | .27 |
| 13 | .41 | .44 | .39 | .44 | .37 | .38 | .36 | .38 | .16 | .14 | .27 | .22 | 1.00 | .44 | .18 | .45 |
| 14 | .29 | .33 | .29 | .32 | .30 | .30 | .35 | .27 | .07 | .09 | .19 | .19 | .44 | 1.00 | .22 | .39 |
| 15 | .24 | .25 | .25 | .22 | .22 | .23 | .24 | .26 | .19 | .19 | .31 | .30 | .18 | .22 | 1.00 | .23 |
| 16 | .46 | .47 | .42 | .48 | .45 | .45 | .46 | .40 | .24 | .11 | .29 | .27 | .45 | .39 | .23 | 1.00 |
| MAX SCORE | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 2 |
| MEAN | 1.10 | .73 | .35 | .93 | .84 | .39 | .25 | .34 | .52 | .67 | .42 | .44 | 2.35 | .31 | .33 | .63 |
| SD | .93 | .91 | .51 | .94 | .90 | .49 | .43 | .48 | .50 | .47 | .49 | .50 | 1.54 | .46 | .47 | .83 |
| CORR(I,T) | .72 | .77 | .75 | .72 | .68 | .70 | .73 | .68 | .37 | .31 | .50 | .47 | .70 | .51 | .41 | .69 |

TOTAL TEST: MEAN = 10.61 SD = 6.93 ALPHA = .87

NUMBER OF SUBJECTS: 583

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, MATHEMATICS ASSESSMENT 7

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .12 | .12 | .13 | .13 | .12 | .17 | .07 | .14 | .15 | .06 | .10 | .20 |
| 2 | .12 | 1.00 | .13 | .18 | .18 | .19 | .18 | .11 | .23 | .24 | .16 | .19 | .07 |
| 3 | .12 | .13 | 1.00 | .17 | .18 | .20 | .24 | .08 | .15 | .21 | .04 | .11 | .10 |
| 4 | .13 | .18 | .17 | 1.00 | .97 | .38 | .37 | .27 | .31 | .44 | .30 | .41 | .13 |
| 5 | .13 | .18 | .18 | .97 | 1.00 | .38 | .38 | .29 | .31 | .42 | .29 | .40 | .12 |
| 6 | .12 | .19 | .20 | .38 | .38 | 1.00 | .92 | .17 | .47 | .47 | .28 | .29 | .06 |
| 7 | .17 | .18 | .24 | .37 | .38 | .92 | 1.00 | .17 | .49 | .47 | .28 | .29 | .06 |
| 8 | .07 | .11 | .08 | .27 | .29 | .17 | .17 | 1.00 | .21 | .24 | .16 | .24 | .15 |
| 9 | .14 | .23 | .15 | .31 | .31 | .47 | .49 | .21 | 1.00 | .44 | .26 | .33 | .11 |
| 10 | .15 | .24 | .21 | .44 | .42 | .47 | .47 | .24 | .44 | 1.00 | .36 | .41 | .22 |
| 11 | .06 | .16 | .04 | .30 | .29 | .28 | .28 | .16 | .26 | .36 | 1.00 | .44 | .18 |
| 12 | .10 | .19 | .11 | .41 | .40 | .29 | .29 | .24 | .33 | .41 | .44 | 1.00 | .20 |
| 13 | .20 | .07 | .10 | .13 | .12 | .06 | .06 | .15 | .11 | .22 | .18 | .20 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 1 | 2 | 2 | 2 | 2 | 1 |
| MEAN | .69 | .62 | .84 | .31 | .30 | 2.38 | 2.27 | .25 | .84 | .88 | .52 | .58 | .23 |
| SD | .47 | .49 | .37 | .46 | .46 | 1.74 | 1.76 | .43 | .95 | .92 | .74 | .87 | .43 |
| CORR(i,T) | .27 | .35 | .31 | .61 | .61 | .84 | .85 | .35 | .66 | .70 | .51 | .58 | .25 |

TOTAL TEST: MEAN = 10.72 SD = 6.35 ALPHA = .80

NUMBER OF SUBJECTS: 612

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, MATHEMATICS ASSESSMENT 8

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .06 | .05 | .06 | .05 | .03 | .07 | .05 | .06 | .07 | .08 | .03 | .11 | .07 |
| 2 | .06 | 1.00 | .15 | .09 | .26 | .12 | .07 | .12 | .02 | -.02 | .11 | .07 | .02 | .06 |
| 3 | .05 | .15 | 1.00 | .24 | .24 | .17 | .24 | .25 | .14 | .05 | .20 | .21 | .08 | .17 |
| 4 | .06 | .09 | .24 | 1.00 | .28 | .28 | .20 | .15 | .16 | .02 | .08 | .17 | .13 | .19 |
| 5 | .05 | .26 | .24 | .28 | 1.00 | .27 | .09 | .07 | .16 | .06 | .15 | .17 | .11 | .14 |
| 6 | .03 | .12 | .17 | .28 | .27 | 1.00 | .12 | .08 | .16 | .07 | .14 | .12 | .10 | .18 |
| 7 | .07 | .07 | .24 | .20 | .09 | .12 | 1.00 | .41 | .12 | .14 | .17 | .17 | .16 | .20 |
| 8 | .05 | .12 | .25 | .15 | .07 | .08 | .41 | 1.00 | .10 | .14 | .16 | .11 | .15 | .20 |
| 9 | .06 | .02 | .14 | .16 | .16 | .16 | .12 | .10 | 1.00 | .26 | .25 | .03 | .17 | .09 |
| 10 | .07 | -.02 | .05 | .02 | .06 | .07 | .14 | .14 | .26 | 1.00 | .15 | .03 | .10 | .14 |
| 11 | .08 | .11 | .20 | .08 | .15 | .14 | .17 | .16 | .25 | .15 | 1.00 | .12 | .26 | .13 |
| 12 | .03 | .07 | .21 | .17 | .17 | .12 | .17 | .11 | .03 | .03 | .12 | 1.00 | .19 | .21 |
| 13 | .11 | .02 | .08 | .13 | .11 | .10 | .16 | .15 | .17 | .10 | .26 | .19 | 1.00 | .14 |
| 14 | .07 | .06 | .17 | .19 | .14 | .18 | .20 | .20 | .09 | .14 | .13 | .21 | .14 | 1.00 |
| MAX SCORE | 1 | 1 | 3 | 1 | 2 | 1 | 3 | 1 | 1 | 2 | 3 | 1 | 1 | 1 |
| MEAN | .90 | .06 | 1.20 | .62 | .52 | .28 | 1.96 | .34 | .72 | 1.23 | 1.88 | .66 | .59 | .21 |
| SD | .30 | .24 | 1.07 | .49 | .73 | .45 | 1.15 | .47 | .46 | .90 | 1.32 | .47 | .49 | .41 |
| CORR(I,T) | .20 | .24 | .58 | .43 | .46 | .39 | .59 | .47 | .42 | .40 | .60 | .38 | .40 | .41 |

TOTAL TEST: MEAN = 11.15 SD = 4.26 ALPHA = .65

NUMBER OF SUBJECTS: 478

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, MATHEMATICS ASSESSMENT 9

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .41 | .16 | .16 | .34 | .20 | .28 | .32 | .35 | .27 |
| 2 | .41 | 1.00 | .10 | .12 | .39 | .30 | .38 | .55 | .62 | .33 |
| 3 | .16 | .10 | 1.00 | .53 | .18 | .18 | .22 | .17 | .18 | .19 |
| 4 | .16 | .12 | .53 | 1.00 | .16 | .10 | .18 | .14 | .14 | .13 |
| 5 | .34 | .39 | .18 | .16 | 1.00 | .33 | .47 | .38 | .44 | .24 |
| 6 | .20 | .30 | .18 | .10 | .33 | 1.00 | .39 | .30 | .34 | .18 |
| 7 | .28 | .38 | .22 | .18 | .47 | .39 | 1.00 | .39 | .44 | .31 |
| 8 | .32 | .55 | .17 | .14 | .38 | .30 | .39 | 1.00 | .81 | .34 |
| 9 | .35 | .62 | .18 | .14 | .44 | .34 | .44 | .81 | 1.00 | .39 |
| 10 | .27 | .33 | .19 | .13 | .24 | .18 | .31 | .34 | .39 | 1.00 |
| MAX SCORE | 1 | 2 | 1 | 1 | 2 | 2 | 3 | 1 | 2 | 1 |
| MEAN | .55 | .73 | .74 | .87 | .77 | .27 | .96 | .40 | .83 | .56 |
| SD | .50 | .86 | .45 | .35 | .92 | .64 | 1.14 | .49 | .94 | .50 |
| CORR(I,T) | .54 | .72 | .38 | .33 | .69 | .56 | .73 | .72 | .80 | .52 |

TOTAL TEST: MEAN = 6.67 SD = 4.38 ALPHA = .81

NUMBER OF SUBJECTS: 533

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, WRITING ASSESSMENT 1

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .57 |
| 2 | .57 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.48 | 2.80 |
| SD | .95 | .94 |
| CORR(I,T) | .89 | .89 |

TOTAL TEST: MEAN = 5.29 SD = 1.68 ALPHA = .73

NUMBER OF SUBJECTS: 478

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, WRITING ASSESSMENT 2

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .50 |
| 2 | .50 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.64 | 2.76 |
| SD | 1.00 | .98 |
| CORR(I,T) | .87 | .86 |

TOTAL TEST: MEAN = 5.41 SD = 1.72 ALPHA = .67

NUMBER OF SUBJECTS: 591

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, WRITING ASSESSMENT 3

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .66 |
| 2 | .66 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.50 | 2.70 |
| SD | .93 | .86 |
| CORR(I,T) | .92 | .90 |

TOTAL TEST: MEAN = 5.21 SD = 1.64 ALPHA = .80

NUMBER OF SUBJECTS: 616

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, WRITING ASSESSMENT 4

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .53 |
| 2 | .53 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.33 | 2.81 |
| SD | .96 | .97 |
| CORR(I,T) | .87 | .88 |

TOTAL TEST: MEAN = 5.14 SD = 1.69 ALPHA = .70

NUMBER OF SUBJECTS: 634

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, WRITING ASSESSMENT 5

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .55 |
| 2 | .55 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.59 | 3.17 |
| SD | .84 | .83 |
| CORR(I,T) | .88 | .88 |

TOTAL TEST: MEAN = 5.76 SD = 1.46 ALPHA = .71

NUMBER OF SUBJECTS: 580

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, WRITING ASSESSMENT 6

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .69 |
| 2 | .69 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.38 | 2.66 |
| SD | .82 | .86 |
| CORR(I,T) | .92 | .92 |

TOTAL TEST: MEAN = 5.04 SD = 1.55 ALPHA = .82

NUMBER OF SUBJECTS: 558

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 8, WRITING ASSESSMENT 7

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .58 |
| 2 | .58 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.55 | 2.98 |
| SD | .95 | .87 |
| CORR(I,T) | .90 | .88 |

TOTAL TEST: MEAN = 5.53 SD = 1.62 ALPHA = .73

NUMBER OF SUBJECTS: 433

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, READING ASSESSMENT 1

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .27 | .09 | .07 | .15 | .10 | .10 | .11 | .09 | .15 |
| 2 | .27 | 1.00 | .12 | .17 | .15 | .23 | .11 | .20 | .15 | .34 |
| 3 | .09 | .12 | 1.00 | -.00 | .07 | .02 | .08 | .03 | .06 | .14 |
| 4 | .07 | .17 | -.00 | 1.00 | .10 | .19 | .09 | .23 | .30 | .16 |
| 5 | .15 | .15 | .07 | .10 | 1.00 | .14 | .10 | .26 | .31 | .16 |
| 6 | .10 | .23 | .02 | .19 | .14 | 1.00 | .30 | .32 | .24 | .25 |
| 7 | .10 | .11 | .08 | .09 | .10 | .30 | 1.00 | .11 | .14 | .19 |
| 8 | .11 | .20 | .03 | .23 | .26 | .32 | .11 | 1.00 | .21 | .22 |
| 9 | .09 | .15 | .06 | .30 | .31 | .24 | .14 | .21 | 1.00 | .16 |
| 10 | .15 | .34 | .14 | .16 | .16 | .25 | .19 | .22 | .16 | 1.00 |
| MAX SCORE | 2 | 3 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 4 |
| MEAN | 1.33 | 1.74 | 1.10 | .88 | .93 | .88 | .58 | .86 | .91 | 2.34 |
| SD | .71 | .82 | .91 | .32 | .25 | .32 | .49 | .34 | .29 | 1.03 |
| CORR(I,T) | .49 | .64 | .46 | .34 | .36 | .46 | .41 | .43 | .39 | .69 |

TOTAL TEST: MEAN = 11.56 SD = 2.81 ALPHA = .58

NUMBER OF SUBJECTS: 576

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, READING ASSESSMENT 2

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .14 | .17 | .08 | .08 | .11 | -.00 | .13 | .04 | .09 | .12 | .22 | .22 | .15 | .19 | .10 | .15 | .18 | .16 | .17 | .11 | .23 |
| 2 | .14 | 1.00 | .21 | .11 | .14 | .12 | .07 | .09 | .10 | .15 | .18 | .18 | .20 | .17 | .17 | .10 | .20 | .19 | .17 | .16 | .20 | .29 |
| 3 | .17 | .21 | 1.00 | .14 | .30 | .10 | .03 | .14 | .07 | .19 | .19 | .20 | .21 | .20 | .26 | .18 | .23 | .19 | .23 | .22 | .13 | .31 |
| 4 | .08 | .11 | .14 | 1.00 | .03 | .06 | .04 | .07 | .04 | .05 | .02 | .03 | .02 | .01 | .06 | .09 | .22 | .26 | .20 | .18 | .15 | .15 |
| 5 | .08 | .14 | .30 | .03 | 1.00 | .23 | -.16 | .29 | .15 | .24 | .12 | .16 | .20 | .17 | .20 | .07 | .08 | .08 | .10 | .10 | .07 | .17 |
| 6 | .11 | .12 | .10 | .06 | .23 | 1.00 | .18 | .15 | .05 | .19 | .17 | .07 | .20 | .14 | .10 | .06 | .03 | .05 | .07 | .09 | .12 | .09 |
| 7 | -.00 | .07 | .03 | .04 | -.16 | .18 | 1.00 | -.13 | -.05 | .03 | .12 | .04 | .05 | .05 | .01 | .01 | .01 | .02 | .10 | .09 | .03 | .06 |
| 8 | .13 | .09 | .14 | .07 | .29 | .15 | -.13 | 1.00 | .21 | .29 | .08 | .05 | .12 | .13 | .18 | .07 | .14 | .09 | .04 | .14 | .03 | .17 |
| 9 | .04 | .10 | .07 | .04 | .15 | .05 | -.05 | .21 | 1.00 | .10 | .04 | .03 | .01 | .05 | .02 | .05 | .10 | .07 | .01 | .06 | .06 | .06 |
| 10 | .09 | .15 | .19 | .05 | .24 | .19 | .03 | .29 | .10 | 1.00 | .14 | .13 | .29 | .26 | .23 | .08 | .15 | .08 | .10 | .15 | .18 | .22 |
| 11 | .12 | .18 | .19 | .02 | .12 | .17 | .12 | .08 | .04 | .14 | 1.00 | .30 | .37 | .40 | .44 | .03 | .11 | .06 | .09 | .14 | .06 | .20 |
| 12 | .22 | .18 | .20 | .03 | .16 | .07 | .04 | .05 | .03 | .13 | .30 | 1.00 | .55 | .37 | .46 | .00 | .18 | .12 | .16 | .17 | .11 | .22 |
| 13 | .22 | .20 | .21 | .02 | .20 | .20 | .05 | .12 | .01 | .29 | .37 | .55 | 1.00 | .50 | .53 | .10 | .14 | .08 | .10 | .18 | .11 | .29 |
| 14 | .15 | .17 | .20 | .01 | .17 | .14 | .05 | .13 | .05 | .26 | .40 | .37 | .50 | 1.00 | .53 | .04 | .13 | .11 | .13 | .21 | .10 | .23 |
| 15 | .19 | .17 | .26 | .06 | .20 | .10 | .01 | .18 | .02 | .23 | .44 | .46 | .53 | .53 | 1.00 | .03 | .20 | .15 | .10 | .22 | .11 | .28 |
| 16 | .10 | .10 | .18 | .09 | .07 | .06 | .01 | .07 | .05 | .08 | .03 | .00 | .10 | .04 | .03 | 1.00 | .11 | .05 | .04 | .01 | .02 | .15 |
| 17 | .15 | .20 | .23 | .22 | .08 | .03 | .01 | .14 | .10 | .15 | .11 | .18 | .14 | .13 | .20 | .11 | 1.00 | .30 | .30 | .29 | .21 | .21 |
| 18 | .18 | .19 | .19 | .26 | .08 | .05 | .02 | .09 | .07 | .08 | .06 | .12 | .08 | .11 | .15 | .05 | .30 | 1.00 | .30 | .21 | .18 | .22 |
| 19 | .16 | .17 | .23 | .20 | .10 | .07 | .10 | .04 | .01 | .10 | .09 | .16 | .10 | .13 | .10 | .04 | .30 | .30 | 1.00 | .29 | .14 | .27 |
| 20 | .17 | .16 | .22 | .18 | .10 | .09 | .09 | .14 | .06 | .15 | .14 | .17 | .18 | .21 | .22 | .01 | .29 | .21 | .29 | 1.00 | .14 | .19 |
| 21 | .11 | .20 | .13 | .15 | .07 | .12 | .03 | .03 | .06 | .18 | .06 | .11 | .11 | .10 | .11 | .02 | .21 | .18 | .14 | .14 | 1.00 | .16 |
| 22 | .23 | .29 | .31 | .15 | .17 | .09 | .06 | .17 | .06 | .22 | .20 | .22 | .29 | .23 | .28 | .15 | .21 | .22 | .27 | .19 | .16 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 |
| MEAN | .93 | .68 | .80 | .71 | .84 | .79 | .44 | .92 | .72 | .92 | .72 | .83 | .85 | .82 | .81 | .54 | .76 | .65 | .62 | .75 | .39 | 2.13 |
| SD | .26 | .47 | .40 | .45 | .36 | .40 | .50 | .27 | .45 | .27 | .45 | .37 | .35 | .38 | .39 | .50 | .43 | .48 | .49 | .43 | .49 | 1.15 |
| CORR(i,T) | .38 | .48 | .52 | .34 | .37 | .33 | .19 | .32 | .23 | .41 | .45 | .47 | .55 | .51 | .55 | .27 | .48 | .44 | .46 | .46 | .37 | .66 |

TOTAL TEST: MEAN = 17.63 SD = 4.25 ALPHA = .76

NUMBER OF SUBJECTS: 644

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, READING ASSESSMENT 3

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .14 | .10 | .04 | .23 | .20 | .08 | .15 | .02 | .08 | .02 | .03 | .11 | .07 | .09 | -.02 | .01 | .09 | .23 | .21 | .18 | .25 |
| 2 | .14 | 1.00 | .15 | .11 | .13 | .20 | .04 | .21 | .10 | .13 | .00 | .04 | .05 | .07 | .07 | .08 | .07 | .09 | .12 | .11 | .12 | .18 |
| 3 | .10 | .15 | 1.00 | -.02 | .07 | .07 | .05 | .05 | .08 | .04 | .03 | -.02 | .05 | .03 | -.04 | .02 | .02 | .07 | .06 | .03 | .06 | .07 |
| 4 | .04 | .11 | -.02 | 1.00 | .07 | .08 | .05 | .08 | .15 | .02 | .04 | .03 | .00 | -.00 | .05 | .06 | .04 | .07 | .03 | .06 | .09 | .10 |
| 5 | .23 | .13 | .07 | .07 | 1.00 | .09 | .06 | .13 | .04 | .08 | .05 | -.01 | .09 | .05 | .05 | .00 | .06 | .16 | .08 | .11 | .14 | .10 |
| 6 | .20 | .20 | .07 | .08 | .09 | 1.00 | .14 | .18 | .08 | .09 | .07 | .10 | .10 | .12 | .08 | .06 | .11 | .16 | .16 | .16 | .23 | .28 |
| 7 | .08 | .04 | .05 | .05 | .06 | .14 | 1.00 | .14 | .13 | .14 | .18 | .12 | .12 | .08 | .09 | .05 | .12 | .16 | .12 | .10 | .18 | .15 |
| 8 | .15 | .21 | .05 | .08 | .13 | .18 | .14 | 1.00 | .15 | .24 | .10 | .12 | .24 | .14 | .17 | .03 | .12 | .21 | .17 | .19 | .20 | .22 |
| 9 | .02 | .10 | .08 | .15 | .04 | .08 | .13 | .15 | 1.00 | .27 | .07 | .12 | .14 | .16 | .06 | .03 | .10 | .06 | .05 | .06 | .07 | .10 |
| 10 | .08 | .13 | .04 | .02 | .08 | .09 | .14 | .24 | .27 | 1.00 | .15 | .14 | .20 | .14 | .10 | -.02 | .17 | .06 | .09 | .16 | .07 | .11 |
| 11 | .02 | .00 | .03 | .04 | .05 | .07 | .18 | .10 | .07 | .15 | 1.00 | .12 | .26 | .16 | -.00 | .15 | .15 | .10 | .07 | .20 | .04 | .14 |
| 12 | .03 | .04 | -.02 | .03 | -.01 | .10 | .12 | .12 | .12 | .14 | .12 | 1.00 | .15 | .10 | .15 | .00 | .14 | .07 | .09 | .20 | .08 | .07 |
| 13 | .11 | .05 | .05 | .00 | .09 | .10 | .12 | .24 | .14 | .20 | .26 | .15 | 1.00 | .30 | .10 | .03 | .17 | .03 | .12 | .16 | .06 | .14 |
| 14 | .07 | .07 | .03 | -.00 | .05 | .12 | .08 | .14 | .16 | .14 | .16 | .10 | .30 | 1.00 | -.02 | .05 | .20 | .10 | .12 | .15 | .13 | .12 |
| 15 | .09 | .07 | -.04 | .05 | .05 | .08 | .09 | .17 | .06 | .10 | -.00 | .15 | .10 | -.02 | 1.00 | -.06 | .03 | .12 | .11 | .11 | .09 | .13 |
| 16 | -.02 | .08 | .02 | .06 | .00 | .06 | .05 | .03 | .03 | -.02 | .15 | .00 | .03 | .05 | -.06 | 1.00 | -.02 | .08 | -.02 | .08 | .05 | .07 |
| 17 | .01 | .07 | .02 | .04 | .06 | .11 | .12 | .12 | .10 | .17 | .15 | .14 | .17 | .20 | .03 | -.02 | 1.00 | -.02 | .07 | .09 | .11 | .08 |
| 18 | .09 | .09 | .07 | .07 | .16 | .16 | .16 | .21 | .06 | .06 | .10 | .07 | .03 | .10 | .12 | .08 | -.02 | 1.00 | -.03 | .33 | .58 | .19 |
| 19 | .23 | .12 | .06 | .03 | .08 | .16 | .12 | .17 | .05 | .09 | .07 | .09 | .12 | .12 | .11 | -.02 | .07 | -.03 | 1.00 | .31 | .44 | .19 |
| 20 | .21 | .11 | .03 | .06 | .11 | .16 | .10 | .19 | .06 | .16 | .20 | .20 | .16 | .15 | .11 | .08 | .09 | .33 | .31 | 1.00 | .08 | .22 |
| 21 | .18 | .12 | .06 | .09 | .14 | .23 | .18 | .20 | .07 | .07 | .04 | .08 | .06 | .13 | .09 | .05 | .11 | .58 | .44 | .08 | 1.00 | .18 |
| 22 | .25 | .18 | .07 | .10 | .10 | .28 | .15 | .22 | .10 | .11 | .14 | .07 | .14 | .12 | .13 | .07 | .08 | .19 | .19 | .22 | .18 | 1.00 |
| MAX SCORE | 2 | 2 | 1 | 1 | 1 | 5 | 3 | 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 |
| MEAN | 1.74 | 1.66 | .87 | .91 | .87 | 3.32 | 2.57 | 4.46 | .99 | .96 | .92 | .88 | .94 | .95 | .62 | .62 | .99 | .63 | .82 | .92 | .57 | 2.38 |
| SD | .59 | .73 | .34 | .29 | .34 | 1.27 | .65 | .77 | .11 | .18 | .27 | .33 | .24 | .21 | .48 | .49 | .12 | .48 | .39 | .28 | .49 | .98 |
| CORR(i,T) | .44 | .45 | .21 | .21 | .30 | .62 | .40 | .54 | .23 | .30 | .27 | .27 | .32 | .28 | .30 | .20 | .22 | .45 | .41 | .43 | .51 | .60 |

TOTAL TEST: MEAN = 29.58 SD = 4.25 ALPHA = .68

NUMBER OF SUBJECTS: 708

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, READING ASSESSMENT 4

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .14 | .19 | .16 | .19 | .06 | .37 | .12 | .27 | .07 | .00 | .13 | .09 | .06 | .08 | -.06 | .14 | .06 | .13 | -.04 | .09 | .13 | -.05 | .06 | .13 | .18 | .01 | .15 | .15 |
| 2 | .14 | 1.00 | .34 | .21 | .17 | .18 | .08 | .19 | .11 | .25 | .08 | .09 | .06 | .12 | .02 | .08 | -.01 | .05 | -.00 | .04 | .09 | .03 | .03 | .03 | .08 | .09 | .08 | .06 | .08 |
| 3 | .19 | .34 | 1.00 | .31 | .16 | .26 | .14 | .33 | .20 | .13 | -.03 | -.01 | .03 | .04 | -.02 | -.02 | -.03 | .07 | -.00 | -.01 | .05 | .02 | .02 | .05 | .05 | .04 | .06 | .03 | .02 |
| 4 | .16 | .21 | .31 | 1.00 | .07 | .15 | .13 | .13 | .23 | .06 | .00 | .09 | .08 | .03 | .04 | -.04 | .05 | .04 | .05 | .06 | .04 | .09 | -.04 | .07 | .12 | .08 | .01 | .11 | .13 |
| 5 | .19 | .17 | .16 | .07 | 1.00 | .22 | .10 | .07 | .16 | .27 | .08 | .06 | .04 | .11 | .04 | .08 | .09 | .05 | .14 | .04 | .05 | .15 | .00 | .05 | .11 | .13 | .03 | .13 | .18 |
| 6 | .06 | .18 | .26 | .15 | .22 | 1.00 | .09 | .08 | .10 | .31 | .04 | .07 | .06 | .17 | .13 | .09 | .04 | .00 | .02 | .08 | .10 | .10 | .05 | .06 | .10 | .14 | .06 | .04 | .15 |
| 7 | .37 | .08 | .14 | .13 | .10 | .09 | 1.00 | .12 | .21 | -.04 | -.02 | .08 | .19 | .05 | .11 | -.01 | .10 | .12 | .08 | .04 | .01 | .03 | -.08 | .06 | .07 | .14 | .05 | .06 | .21 |
| 8 | .12 | .19 | .33 | .13 | .07 | .08 | .12 | 1.00 | .18 | .05 | -.03 | -.03 | .01 | .02 | -.03 | -.02 | -.01 | .02 | .04 | .05 | .07 | .03 | -.02 | .03 | .05 | .10 | .08 | .01 | .09 |
| 9 | .27 | .11 | .20 | .23 | .16 | .10 | .21 | .18 | 1.00 | .09 | .06 | .11 | .08 | .12 | .08 | -.06 | .13 | .06 | .13 | .00 | .04 | .13 | .00 | .06 | .14 | .18 | -.01 | .08 | .19 |
| 0 | .07 | .25 | .13 | .06 | .27 | .31 | -.04 | .05 | .09 | 1.00 | .05 | .02 | .04 | .20 | .11 | .05 | .06 | .04 | -.03 | .02 | .05 | .06 | .02 | .02 | .08 | .10 | .06 | .08 | .09 |
| 1 | .00 | .08 | -.03 | .00 | .08 | .04 | -.02 | -.03 | .06 | .05 | 1.00 | .10 | .07 | -.00 | .07 | .12 | .01 | .01 | .06 | .01 | .06 | .04 | .07 | .02 | .12 | .08 | .02 | .07 | .07 |
| 2 | .13 | .09 | -.01 | .09 | .06 | .07 | .08 | -.03 | .11 | .02 | .10 | 1.00 | .09 | .22 | .15 | .04 | .11 | .11 | .09 | -.02 | .08 | .06 | -.03 | .03 | .05 | .07 | -.01 | .02 | .09 |
| 3 | .09 | .06 | .03 | .08 | .04 | .06 | .19 | .01 | .08 | .04 | .07 | .09 | 1.00 | .13 | .28 | .07 | .04 | .02 | .04 | .04 | .03 | .10 | .00 | .05 | .03 | .02 | -.02 | .04 | .14 |
| 4 | .06 | .12 | .04 | .03 | .11 | .17 | .05 | .02 | .12 | .20 | -.00 | .22 | .13 | 1.00 | .23 | .16 | .08 | .07 | .02 | .00 | .05 | .04 | .04 | .00 | .02 | .03 | -.06 | .01 | .19 |
| 5 | .08 | .02 | -.02 | .04 | .04 | .13 | .11 | -.03 | .08 | .11 | .07 | .15 | .28 | .23 | 1.00 | .13 | .02 | .08 | .06 | .04 | .04 | .05 | .03 | .04 | .05 | .07 | .02 | .06 | .13 |
| 6 | -.06 | .08 | -.02 | -.04 | .08 | .09 | -.01 | -.02 | -.06 | .05 | .12 | .04 | .07 | .16 | .13 | 1.00 | .02 | .04 | .07 | .01 | .04 | -.08 | .02 | -.05 | .01 | -.02 | -.04 | .01 | .09 |
| 7 | .14 | -.01 | -.03 | .05 | .09 | .04 | .10 | -.01 | .13 | .06 | .01 | .11 | .04 | .08 | .02 | .02 | 1.00 | .08 | .13 | .02 | -.03 | .06 | -.00 | .12 | .08 | .06 | -.02 | .09 | .13 |
| 8 | .06 | .05 | .07 | .04 | .05 | .00 | .12 | .02 | .06 | .04 | .01 | .11 | .02 | .07 | .08 | .04 | .08 | 1.00 | .10 | .06 | .08 | .12 | .02 | .07 | .05 | .09 | .06 | .05 | .17 |
| 9 | .13 | -.00 | -.00 | .05 | .14 | .02 | .08 | .04 | .13 | -.03 | .06 | .09 | .04 | .02 | .06 | .07 | .13 | .10 | 1.00 | .13 | .10 | .07 | .02 | .10 | .09 | .13 | .06 | -.02 | .16 |
| 0 | -.04 | .04 | -.01 | .06 | .04 | .08 | .04 | .05 | .00 | .02 | .01 | -.02 | .04 | .00 | .04 | .01 | .02 | .06 | .13 | 1.00 | .03 | .07 | .04 | .13 | .03 | .05 | .17 | .01 | .11 |
| 1 | .09 | .09 | .05 | .04 | .05 | .10 | .01 | .07 | .04 | .05 | .06 | .08 | .03 | .05 | .04 | .04 | -.03 | .08 | .10 | .03 | 1.00 | -.05 | .16 | .08 | -.05 | .09 | .12 | -.12 | .11 |
| 2 | .13 | .03 | .02 | .09 | .15 | .10 | .03 | .03 | .13 | .06 | .04 | .06 | .10 | .04 | .05 | -.08 | .06 | .12 | .07 | .07 | -.05 | 1.00 | .02 | .22 | .32 | .20 | -.00 | .28 | .15 |
| 3 | -.05 | .03 | .02 | -.04 | .00 | .05 | -.08 | -.02 | .00 | .02 | .07 | -.03 | .00 | .04 | .03 | .02 | -.00 | .02 | .02 | .04 | .16 | .02 | 1.00 | .01 | -.04 | -.03 | .03 | -.03 | -.03 |
| 4 | .06 | .03 | .05 | .07 | .05 | .06 | .06 | .03 | .06 | .02 | .02 | .03 | .05 | .00 | .04 | -.05 | .12 | .07 | .10 | .13 | .08 | .22 | .01 | 1.00 | .16 | .14 | .15 | .11 | .11 |
| 5 | .13 | .08 | .05 | .12 | .11 | .10 | .07 | .05 | .14 | .08 | .12 | .05 | .03 | .02 | .05 | .01 | .08 | .05 | .09 | .03 | -.05 | .32 | -.04 | .16 | 1.00 | .18 | .02 | .31 | .19 |
| 6 | .18 | .09 | .04 | .08 | .13 | .14 | .14 | .10 | .18 | .10 | .08 | .07 | .02 | .03 | .07 | -.02 | .06 | .09 | .13 | .05 | .09 | .20 | -.03 | .14 | .18 | 1.00 | .11 | .14 | .18 |
| 7 | .01 | .08 | .06 | .01 | .03 | .06 | .05 | .08 | -.01 | .06 | .02 | -.01 | -.02 | -.06 | .02 | -.04 | -.02 | .06 | .06 | .17 | .12 | -.00 | .03 | .15 | .02 | .11 | 1.00 | .05 | .09 |
| 8 | .15 | .06 | .03 | .11 | .13 | .04 | .06 | .01 | .08 | .08 | .07 | .02 | .04 | .01 | .06 | .01 | .09 | .05 | -.02 | .01 | -.12 | .28 | -.03 | .11 | .31 | .14 | .05 | 1.00 | .14 |
| 9 | .15 | .08 | .02 | .13 | .18 | .15 | .21 | .09 | .19 | .09 | .07 | .09 | .14 | .19 | .13 | .09 | .13 | .17 | .16 | .11 | .11 | .15 | -.03 | .11 | .19 | .18 | .09 | .14 | 1.00 |
| MAX | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4 |
| EAN | .75 | .97 | .99 | .95 | .83 | .95 | .80 | .98 | .88 | .91 | .94 | .82 | .93 | .94 | .97 | .97 | .71 | .71 | .41 | .25 | .34 | .38 | .23 | .17 | .37 | .45 | .24 | .42 | 2.50 |
| SD | .43 | .17 | .11 | .23 | .37 | .22 | .40 | .13 | .32 | .28 | .23 | .39 | .25 | .24 | .18 | .17 | .46 | .45 | .49 | .43 | .47 | .49 | .42 | .38 | .48 | .50 | .43 | .49 | .98 |
| ORR | .43 | .28 | .22 | .30 | .40 | .33 | .37 | .20 | .41 | .27 | .20 | .29 | .25 | .27 | .27 | .11 | .31 | .33 | .36 | .26 | .27 | .42 | .13 | .34 | .42 | .44 | .25 | .36 | .61 |

OTAL TEST: MEAN = 21.75 SD = 3.69 ALPHA = .68

UMBER OF SUBJECTS: 608

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, READING ASSESSMENT 5

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .09 | .26 | .16 | .19 | .05 | .06 | .23 | .06 | .23 | .13 | .07 |
| 2 | .09 | 1.00 | .16 | .14 | .11 | .17 | .24 | .23 | .08 | .10 | .26 | .13 |
| 3 | .26 | .16 | 1.00 | .21 | .24 | .16 | .09 | .23 | .11 | .27 | .15 | .13 |
| 4 | .16 | .14 | .21 | 1.00 | .71 | .20 | .14 | .22 | .16 | .30 | .19 | .16 |
| 5 | .19 | .11 | .24 | .71 | 1.00 | .18 | .07 | .20 | .10 | .27 | .22 | .19 |
| 6 | .05 | .17 | .16 | .20 | .18 | 1.00 | .27 | .21 | .08 | .17 | .21 | .13 |
| 7 | .06 | .24 | .09 | .14 | .07 | .27 | 1.00 | .18 | .12 | .21 | .26 | .16 |
| 8 | .23 | .23 | .23 | .22 | .20 | .21 | .18 | 1.00 | .15 | .34 | .38 | .16 |
| 9 | .06 | .08 | .11 | .16 | .10 | .08 | .12 | .15 | 1.00 | .16 | .27 | .08 |
| 10 | .23 | .10 | .27 | .30 | .27 | .17 | .21 | .34 | .16 | 1.00 | .33 | .38 |
| 11 | .13 | .26 | .15 | .19 | .22 | .21 | .26 | .38 | .27 | .33 | 1.00 | .22 |
| 12 | .07 | .13 | .13 | .16 | .19 | .13 | .16 | .16 | .08 | .38 | .22 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 5 | 4 |
| MEAN | .61 | .85 | .64 | .52 | .44 | .64 | .39 | .77 | .73 | 1.81 | 2.38 | 2.05 |
| SD | .49 | .36 | .48 | .50 | .50 | .48 | .49 | .69 | .44 | 1.08 | 1.64 | .95 |
| CORR(I,T) | .36 | .37 | .42 | .51 | .50 | .40 | .42 | .59 | .36 | .69 | .73 | .53 |

TOTAL TEST: MEAN = 11.83 SD = 4.43 ALPHA = .70

NUMBER OF SUBJECTS: 479

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, READING ASSESSMENT 6

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .17 | .17 | .15 | .23 | .13 | .15 | .22 | .18 |
| 2 | .17 | 1.00 | .26 | .20 | .31 | .32 | .29 | .26 | .26 |
| 3 | .17 | .26 | 1.00 | .10 | .22 | .15 | .14 | .25 | .24 |
| 4 | .15 | .20 | .10 | 1.00 | .16 | .15 | .16 | .13 | .16 |
| 5 | .23 | .31 | .22 | .16 | 1.00 | .27 | .20 | .24 | .28 |
| 6 | .13 | .32 | .15 | .15 | .27 | 1.00 | .23 | .20 | .21 |
| 7 | .15 | .29 | .14 | .16 | .20 | .23 | 1.00 | .18 | .21 |
| 8 | .22 | .26 | .25 | .13 | .24 | .20 | .18 | 1.00 | .67 |
| 9 | .18 | .26 | .24 | .16 | .28 | .21 | .21 | .67 | 1.00 |
| MAX SCORE | 5 | 2 | 2 | 3 | 2 | 2 | 1 | 2 | 4 |
| MEAN | 2.35 | 1.10 | .56 | 2.34 | .98 | 1.29 | .67 | .67 | .85 |
| SD | 1.21 | .94 | .81 | .84 | .83 | .77 | .48 | .82 | 1.17 |
| CORR(i,T) | .54 | .61 | .50 | .43 | .58 | .51 | .44 | .65 | .68 |

TOTAL TEST: MEAN = 10.81 SD = 4.40 ALPHA = .70

NUMBER OF SUBJECTS: 599

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, READING ASSESSMENT 7

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .22 | .18 | .15 | .23 | .20 | .05 | .05 | .16 | .12 | .09 | .07 | -.00 | .04 | .11 | .19 | .14 |
| 2 | .22 | 1.00 | .14 | .19 | .29 | .19 | .05 | .07 | .06 | .07 | .09 | .02 | -.04 | .10 | .11 | .15 | .19 |
| 3 | .18 | .14 | 1.00 | .05 | .09 | .10 | -.02 | .03 | .07 | .07 | .07 | -.07 | -.04 | -.02 | .05 | .06 | .04 |
| 4 | .15 | .19 | .05 | 1.00 | .19 | .07 | .03 | .04 | .02 | .14 | .07 | -.01 | .04 | .08 | .04 | .04 | .07 |
| 5 | .23 | .29 | .09 | .19 | 1.00 | .22 | .12 | .16 | .12 | .15 | .13 | .16 | .10 | .09 | .12 | .16 | .24 |
| 6 | .20 | .19 | .10 | .07 | .22 | 1.00 | .09 | .04 | .19 | .19 | .17 | .17 | .06 | .19 | .22 | .28 | .45 |
| 7 | .05 | .05 | -.02 | .03 | .12 | .09 | 1.00 | .22 | .26 | .15 | .23 | .27 | .15 | .20 | .09 | .08 | .14 |
| 8 | .05 | .07 | .03 | .04 | .16 | .04 | .22 | 1.00 | .08 | .05 | .06 | .08 | .41 | .18 | .08 | .04 | .12 |
| 9 | .16 | .06 | .07 | .02 | .12 | .19 | .26 | .08 | 1.00 | .32 | .21 | .17 | .10 | .36 | .12 | .17 | .17 |
| 10 | .12 | .07 | .07 | .14 | .15 | .19 | .15 | .05 | .32 | 1.00 | .24 | .19 | .07 | .18 | .13 | .16 | .18 |
| 11 | .09 | .09 | .07 | .07 | .13 | .17 | .23 | .09 | .21 | .24 | 1.00 | .20 | .15 | .18 | .12 | .12 | .13 |
| 12 | .07 | .02 | -.07 | -.01 | .16 | .17 | .27 | .08 | .17 | .19 | .20 | 1.00 | .10 | .25 | .09 | .06 | .15 |
| 13 | -.00 | -.04 | -.04 | .04 | .10 | .06 | .15 | .41 | .10 | .07 | .15 | .10 | 1.00 | .15 | .09 | .09 | .11 |
| 14 | .04 | .10 | -.02 | .08 | .09 | .19 | .20 | .18 | .36 | .18 | .18 | .25 | .15 | 1.00 | .14 | .17 | .17 |
| 15 | .17 | .11 | .05 | .04 | .12 | .22 | .09 | .08 | .12 | .13 | .12 | .09 | .09 | .14 | 1.00 | .16 | .28 |
| 16 | .19 | .15 | .06 | .04 | .16 | .28 | .08 | .04 | .17 | .16 | .12 | .06 | .09 | .17 | .16 | 1.00 | .27 |
| 17 | .14 | .19 | .04 | .07 | .24 | .45 | .14 | .12 | .17 | .18 | .13 | .15 | .11 | .17 | .28 | .27 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 |
| MEAN | .56 | .79 | .42 | .94 | .84 | 2.22 | .79 | .40 | .88 | .90 | .86 | .67 | .40 | .77 | .40 | 1.03 | 2.15 |
| SD | .50 | .41 | .49 | .24 | .37 | 1.17 | .41 | .49 | .32 | .30 | .35 | .47 | .49 | .42 | .49 | .76 | 1.07 |
| CORR(i,T) | .40 | .37 | .23 | .21 | .45 | .68 | .37 | .34 | .42 | .40 | .38 | .37 | .32 | .43 | .43 | .51 | .67 |

TOTAL TEST: MEAN = 15.00 SD = 4.00 ALPHA = .70

NUMBER OF SUBJECTS: 661

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, READING ASSESSMENT 8

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .53 | .10 | .09 | .16 | .06 | .08 | .04 | .08 | .09 | .07 | .08 | .06 | .01 | .22 | .16 |
| 2 | .53 | 1.00 | .12 | .09 | .07 | -.01 | .04 | -.04 | .02 | .06 | .07 | .06 | .01 | -.06 | .18 | .15 |
| 3 | .10 | .12 | 1.00 | .08 | .06 | -.01 | .07 | .04 | .00 | .11 | -.05 | .03 | .01 | .01 | .22 | .14 |
| 4 | .09 | .09 | .08 | 1.00 | .13 | .04 | .11 | .04 | .03 | .06 | -.02 | .15 | .15 | .07 | .10 | .16 |
| 5 | .16 | .07 | .06 | .13 | 1.00 | .04 | .03 | .04 | -.04 | .09 | .01 | .02 | .02 | -.04 | .13 | .07 |
| 6 | .06 | -.01 | -.01 | .04 | .04 | 1.00 | .23 | .20 | .16 | .10 | -.01 | .12 | .08 | .02 | .01 | -.02 |
| 7 | .08 | .04 | .07 | .11 | .03 | .23 | 1.00 | .33 | .20 | .24 | .14 | .37 | .33 | .15 | .16 | .13 |
| 8 | .04 | -.04 | .04 | .04 | .04 | .20 | .33 | 1.00 | .21 | .14 | .10 | .20 | .19 | .08 | .07 | .09 |
| 9 | .08 | .02 | .00 | .03 | -.04 | .16 | .20 | .21 | 1.00 | .12 | .06 | .21 | .21 | .01 | .03 | .03 |
| 10 | .09 | .06 | .11 | .06 | .09 | .10 | .24 | .14 | .12 | 1.00 | .20 | .28 | .19 | .13 | .13 | .10 |
| 11 | .07 | .07 | -.05 | -.02 | .01 | -.01 | .14 | .10 | .06 | .20 | 1.00 | .19 | .13 | .02 | .06 | .14 |
| 12 | .08 | .06 | .03 | .15 | .02 | .12 | .37 | .20 | .21 | .28 | .19 | 1.00 | .42 | .03 | .13 | .07 |
| 13 | .06 | .01 | .01 | .15 | .02 | .08 | .33 | .19 | .21 | .19 | .13 | .42 | 1.00 | .10 | .12 | .10 |
| 14 | .01 | -.06 | .01 | .07 | -.04 | .02 | .15 | .08 | .01 | .13 | .02 | .03 | .10 | 1.00 | .20 | .16 |
| 15 | .22 | .18 | .22 | .10 | .13 | .01 | .16 | .07 | .03 | .13 | .06 | .13 | .12 | .20 | 1.00 | .45 |
| 16 | .16 | .15 | .14 | .16 | .07 | -.02 | .13 | .09 | .03 | .10 | .14 | .07 | .10 | .16 | .45 | 1.00 |
| MAX SCORE | 4 | 4 | 2 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | 4 | 4 |
| MEAN | 2.16 | 1.63 | 1.02 | 2.22 | 2.62 | .77 | .91 | .89 | .91 | .84 | .86 | .94 | .96 | 3.42 | 2.82 | 2.53 |
| SD | 1.16 | 1.24 | .54 | .66 | .56 | .44 | .29 | .32 | .28 | .37 | .35 | .24 | .20 | 1.56 | .99 | 1.05 |
| CORR(I,T) | .59 | .52 | .30 | .34 | .26 | .18 | .37 | .25 | .19 | .34 | .21 | .30 | .28 | .46 | .61 | .57 |

TOTAL TEST: MEAN = 25.50 SD = 4.44 ALPHA = .56

NUMBER OF SUBJECTS: 670

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, READING ASSESSMENT 9

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | 1.00 | .23 | .26 | .30 | .35 |
| 2 | .23 | 1.00 | .21 | .23 | .27 |
| 3 | .26 | .21 | 1.00 | .29 | .34 |
| 4 | .30 | .23 | .29 | 1.00 | .41 |
| 5 | .35 | .27 | .34 | .41 | 1.00 |
| MAX SCORE | 2 | 1 | 1 | 2 | 3 |
| MEAN | 1.48 | .78 | .45 | 1.37 | 1.97 |
| SD | .75 | .42 | .50 | .63 | .88 |
| CORR(I,T) | .69 | .51 | .59 | .68 | .78 |

TOTAL TEST: MEAN = 6.06 SD = 2.14 ALPHA = .66

NUMBER OF SUBJECTS: 693

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, MATHEMATICS ASSESSMENT 1

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .26 | .24 | .07 | .22 | .14 | .12 | .14 | -.07 | .15 |
| 2 | .26 | 1.00 | .94 | .23 | .75 | .29 | .32 | .19 | -.12 | .26 |
| 3 | .24 | .94 | 1.00 | .24 | .75 | .29 | .35 | .23 | -.13 | .26 |
| 4 | .07 | .23 | .24 | 1.00 | .28 | .20 | .22 | .12 | -.01 | .17 |
| 5 | .22 | .75 | .75 | .28 | 1.00 | .27 | .31 | .24 | -.12 | .28 |
| 6 | .14 | .29 | .29 | .20 | .27 | 1.00 | .21 | .16 | .00 | .14 |
| 7 | .12 | .32 | .35 | .22 | .31 | .21 | 1.00 | .37 | -.11 | .34 |
| 8 | .14 | .19 | .23 | .12 | .24 | .16 | .37 | 1.00 | -.07 | .26 |
| 9 | -.07 | -.12 | -.13 | -.01 | -.12 | .00 | -.11 | -.07 | 1.00 | -.09 |
| 10 | .15 | .26 | .26 | .17 | .28 | .14 | .34 | .26 | -.09 | 1.00 |
| MAX SCORE | 1 | 2 | 2 | 4 | 4 | 1 | 1 | 1 | 1 | 3 |
| MEAN | .49 | .72 | .73 | 2.42 | 1.57 | .60 | .24 | .10 | .30 | .49 |
| SD | .50 | .89 | .90 | 1.26 | 1.40 | .49 | .43 | .30 | .46 | .77 |
| CORR(i,T) | .36 | .83 | .84 | .55 | .83 | .44 | .50 | .37 | -.03 | .49 |

TOTAL TEST: MEAN = 7.66 SD = 4.45 ALPHA = .73

NUMBER OF SUBJECTS: 647

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, MATHEMATICS ASSESSMENT 2

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .58 | .05 | .17 | .26 | .12 | .13 | .14 | .25 | .19 | .28 |
| 2 | .58 | 1.00 | .04 | .16 | .24 | .14 | .16 | .16 | .19 | .13 | .23 |
| 3 | .05 | .04 | 1.00 | .10 | .07 | .02 | .12 | .03 | -.02 | .03 | .02 |
| 4 | .17 | .16 | .10 | 1.00 | .57 | .13 | .39 | .30 | .15 | .21 | .28 |
| 5 | .26 | .24 | .07 | .57 | 1.00 | .16 | .33 | .35 | .17 | .29 | .35 |
| 6 | .12 | .14 | .02 | .13 | .16 | 1.00 | .06 | .08 | .20 | .14 | .19 |
| 7 | .13 | .16 | .12 | .39 | .33 | .06 | 1.00 | .28 | .16 | .21 | .29 |
| 8 | .14 | .16 | .03 | .30 | .35 | .08 | .28 | 1.00 | .16 | .23 | .26 |
| 9 | .25 | .19 | -.02 | .15 | .17 | .20 | .16 | .16 | 1.00 | .21 | .26 |
| 10 | .19 | .13 | .03 | .21 | .29 | .14 | .21 | .23 | .21 | 1.00 | .63 |
| 11 | .28 | .23 | .02 | .28 | .35 | .19 | .29 | .26 | .26 | .63 | 1.00 |
| MAX SCORE | 2 | 2 | 1 | 2 | 3 | 1 | 4 | 2 | 1 | 1 | 3 |
| MEAN | .97 | 1.02 | .92 | 1.31 | 1.10 | .05 | 3.08 | 1.14 | .17 | .29 | 1.05 |
| SD | .73 | .69 | .27 | .86 | 1.20 | .25 | 1.35 | .91 | .38 | .45 | 1.01 |
| CORR(i,T) | .51 | .49 | .15 | .65 | .73 | .26 | .65 | .56 | .38 | .53 | .66 |

TOTAL TEST: MEAN = 11.11 SD = 4.69 ALPHA = .73

NUMBER OF SUBJECTS: 763

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, MATHEMATICS ASSESSMENT 3

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .20 | .20 | .28 | .19 | .27 | .22 | .24 | .15 | .15 | .17 | .10 | .29 | .27 | .15 | .14 |
| 2 | .20 | 1.00 | .15 | .21 | .14 | .24 | .14 | .16 | .16 | .18 | .17 | .05 | .21 | .22 | .08 | .14 |
| 3 | .20 | .15 | 1.00 | .29 | .24 | .27 | .20 | .21 | .20 | .22 | .19 | .13 | .25 | .24 | .19 | .21 |
| 4 | .28 | .21 | .29 | 1.00 | .26 | .33 | .28 | .28 | .22 | .26 | .22 | .23 | .38 | .36 | .22 | .26 |
| 5 | .19 | .14 | .24 | .26 | 1.00 | .42 | .51 | .54 | .14 | .19 | .19 | .25 | .36 | .34 | .21 | .25 |
| 6 | .27 | .24 | .27 | .33 | .42 | 1.00 | .34 | .34 | .22 | .23 | .24 | .28 | .43 | .42 | .36 | .36 |
| 7 | .22 | .14 | .20 | .28 | .51 | .34 | 1.00 | .88 | .11 | .16 | .17 | .16 | .32 | .31 | .21 | .22 |
| 8 | .24 | .16 | .21 | .28 | .54 | .34 | .88 | 1.00 | .10 | .16 | .16 | .17 | .31 | .32 | .20 | .23 |
| 9 | .15 | .16 | .20 | .22 | .14 | .22 | .11 | .10 | 1.00 | .46 | .49 | .11 | .22 | .23 | .18 | .17 |
| 10 | .15 | .18 | .22 | .26 | .19 | .23 | .16 | .16 | .46 | 1.00 | .50 | .08 | .28 | .23 | .18 | .19 |
| 11 | .17 | .17 | .19 | .22 | .19 | .24 | .17 | .16 | .49 | .50 | 1.00 | .13 | .24 | .24 | .18 | .18 |
| 12 | .10 | .05 | .13 | .23 | .25 | .28 | .16 | .17 | .11 | .08 | .13 | 1.00 | .26 | .25 | .21 | .20 |
| 13 | .29 | .21 | .25 | .38 | .36 | .43 | .32 | .31 | .22 | .28 | .24 | .26 | 1.00 | .85 | .29 | .32 |
| 14 | .27 | .22 | .24 | .36 | .34 | .42 | .31 | .32 | .23 | .23 | .24 | .25 | .85 | 1.00 | .29 | .33 |
| 15 | .15 | .08 | .19 | .22 | .21 | .36 | .21 | .20 | .18 | .18 | .18 | .21 | .29 | .29 | 1.00 | .76 |
| 16 | .14 | .14 | .21 | .26 | .25 | .36 | .22 | .23 | .17 | .19 | .18 | .20 | .32 | .33 | .76 | 1.00 |
| MAX SCORE | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| MEAN | 1.21 | .59 | 1.00 | 1.89 | 1.71 | 1.29 | 1.75 | 1.72 | .28 | .31 | .33 | .82 | 1.22 | 1.09 | 1.31 | 1.29 |
| SD | .90 | .63 | .80 | .94 | .65 | .92 | .61 | .63 | .45 | .46 | .47 | .39 | .91 | .91 | .90 | .90 |
| CORR(I,T) | .48 | .38 | .49 | .60 | .58 | .68 | .58 | .59 | .42 | .45 | .45 | .38 | .72 | .71 | .57 | .60 |

TOTAL TEST: MEAN = 17.82 SD = 6.47 ALPHA = .84

NUMBER OF SUBJECTS: 614





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CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, MATHEMATICS ASSESSMENT 4

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .27 | .45 | .28 | .40 | .34 | .37 | .24 | .25 | .27 | .14 | .35 | .33 | .32 |
| 2 | .27 | 1.00 | .27 | .36 | .31 | .31 | .35 | .23 | .30 | .35 | .19 | .24 | .25 | .38 |
| 3 | .45 | .27 | 1.00 | .32 | .67 | .37 | .33 | .16 | .28 | .33 | .16 | .36 | .36 | .35 |
| 4 | .28 | .36 | .32 | 1.00 | .38 | .35 | .34 | .22 | .31 | .35 | .21 | .33 | .30 | .39 |
| 5 | .40 | .31 | .67 | .38 | 1.00 | .47 | .46 | .23 | .36 | .43 | .27 | .36 | .40 | .47 |
| 6 | .34 | .31 | .37 | .35 | .47 | 1.00 | .80 | .33 | .50 | .53 | .25 | .51 | .55 | .52 |
| 7 | .37 | .35 | .33 | .34 | .46 | .80 | 1.00 | .34 | .44 | .57 | .27 | .53 | .57 | .57 |
| 8 | .24 | .23 | .16 | .22 | .23 | .33 | .34 | 1.00 | .37 | .35 | .23 | .29 | .31 | .41 |
| 9 | .25 | .30 | .28 | .31 | .36 | .50 | .44 | .37 | 1.00 | .43 | .31 | .56 | .62 | .58 |
| 10 | .27 | .35 | .33 | .35 | .43 | .53 | .57 | .35 | .43 | 1.00 | .30 | .48 | .53 | .56 |
| 11 | .14 | .19 | .16 | .21 | .27 | .25 | .27 | .23 | .31 | .30 | 1.00 | .33 | .32 | .37 |
| 12 | .35 | .24 | .36 | .33 | .36 | .51 | .53 | .29 | .56 | .48 | .33 | 1.00 | .79 | .54 |
| 13 | .33 | .25 | .36 | .30 | .40 | .55 | .57 | .31 | .62 | .53 | .32 | .79 | 1.00 | .57 |
| 14 | .32 | .38 | .35 | .39 | .47 | .52 | .57 | .41 | .58 | .56 | .37 | .54 | .57 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 4 | 2 | 3 | 1 | 2 | 2 |
| MEAN | .70 | .48 | .66 | .43 | .49 | .40 | .92 | 2.43 | 1.03 | .78 | 2.16 | .46 | .72 | .66 |
| SD | .46 | .50 | .47 | .50 | .50 | .49 | .96 | 1.33 | 1.56 | .96 | 1.12 | .50 | .91 | .86 |
| CORR(i,T) | .48 | .49 | .51 | .51 | .62 | .73 | .75 | .58 | .76 | .72 | .52 | .73 | .77 | .79 |

TOTAL TEST: MEAN = 12.33 SD = 7.33 ALPHA = .87

NUMBER OF SUBJECTS: 593

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, MATHEMATICS ASSESSMENT 5

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .17 | .20 | .43 | .14 | .14 | .08 | .08 | .03 | .08 | .11 | .05 | .07 | .09 | .16 | .10 |
| 2 | .17 | 1.00 | .36 | .13 | .10 | .12 | .05 | .04 | .08 | .11 | .06 | .02 | .03 | .10 | .09 | .11 |
| 3 | .20 | .36 | 1.00 | .16 | .08 | .10 | .08 | .07 | .07 | .10 | .08 | .03 | .01 | .07 | .16 | .16 |
| 4 | .43 | .13 | .16 | 1.00 | .08 | .11 | .02 | .03 | .01 | .06 | .09 | .03 | .09 | .09 | .12 | .07 |
| 5 | .14 | .10 | .08 | .08 | 1.00 | .52 | .10 | .17 | .14 | .37 | .32 | .26 | .24 | .28 | .17 | .12 |
| 6 | .14 | .12 | .10 | .11 | .52 | 1.00 | .22 | .21 | .20 | .34 | .33 | .29 | .26 | .26 | .24 | .17 |
| 7 | .08 | .05 | .08 | .02 | .10 | .22 | 1.00 | .45 | .26 | .05 | .16 | .14 | .17 | .12 | .43 | .46 |
| 8 | .08 | .04 | .07 | .03 | .17 | .21 | .45 | 1.00 | .30 | .08 | .19 | .17 | .16 | .15 | .41 | .38 |
| 9 | .03 | .08 | .07 | .01 | .14 | .20 | .26 | .30 | 1.00 | .11 | .16 | .12 | .13 | .16 | .30 | .27 |
| 10 | .08 | .11 | .10 | .06 | .37 | .34 | .05 | .08 | .11 | 1.00 | .42 | .36 | .27 | .42 | .14 | .10 |
| 11 | .11 | .06 | .08 | .09 | .32 | .33 | .16 | .19 | .16 | .42 | 1.00 | .32 | .57 | .50 | .23 | .20 |
| 12 | .05 | .02 | .03 | .03 | .26 | .29 | .14 | .17 | .12 | .36 | .32 | 1.00 | .36 | .49 | .16 | .15 |
| 13 | .07 | .03 | .01 | .09 | .24 | .26 | .17 | .16 | .13 | .27 | .57 | .36 | 1.00 | .48 | .19 | .21 |
| 14 | .09 | .10 | .07 | .09 | .28 | .26 | .12 | .15 | .16 | .42 | .50 | .49 | .48 | 1.00 | .15 | .15 |
| 15 | .16 | .09 | .16 | .12 | .17 | .24 | .43 | .41 | .30 | .14 | .23 | .16 | .19 | .15 | 1.00 | .63 |
| 16 | .10 | .11 | .16 | .07 | .12 | .17 | .46 | .38 | .27 | .10 | .20 | .15 | .21 | .15 | .63 | 1.00 |
| MAX SCORE | 1 | 1 | 1 | 1 | 2 | 4 | 3 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 4 | 1 |
| MEAN | .88 | .85 | .67 | .89 | 1.68 | 2.93 | .86 | .67 | .24 | .84 | .68 | .65 | .58 | .65 | 2.03 | .31 |
| SD | .33 | .36 | .47 | .32 | .63 | 1.42 | 1.20 | .89 | .61 | .37 | .47 | .48 | .49 | .48 | 1.51 | .47 |
| CORR(I,T) | .28 | .24 | .28 | .22 | .51 | .65 | .61 | .58 | .45 | .42 | .53 | .45 | .48 | .48 | .70 | .60 |

TOTAL TEST: MEAN = 15.40 SD = 5.57 ALPHA = .75

NUMBER OF SUBJECTS: 747

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, MATHEMATICS ASSESSMENT 6

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .15 | .00 | .00 | -.12 | .10 | .03 | .01 | .12 | .09 | .09 | .03 | .13 |
| 2 | .15 | 1.00 | .19 | .20 | .14 | .08 | .21 | .19 | .29 | .06 | .20 | .12 | .18 |
| 3 | .00 | .19 | 1.00 | .19 | .13 | -.03 | .55 | .07 | .27 | .06 | .17 | .14 | .21 |
| 4 | .00 | .20 | .19 | 1.00 | .18 | .14 | .14 | .17 | .50 | .17 | .30 | .23 | .27 |
| 5 | -.12 | .14 | .13 | .18 | 1.00 | .29 | .13 | .13 | .16 | .07 | .23 | .13 | .16 |
| 6 | .10 | .08 | -.03 | .14 | .29 | 1.00 | .05 | .08 | .11 | .11 | .30 | .15 | .17 |
| 7 | .03 | .21 | .55 | .14 | .13 | .05 | 1.00 | .13 | .23 | .02 | .20 | .20 | .24 |
| 8 | .01 | .19 | .07 | .17 | .13 | .08 | .13 | 1.00 | .20 | .18 | .35 | .18 | .15 |
| 9 | .12 | .29 | .27 | .50 | .16 | .11 | .23 | .20 | 1.00 | .23 | .38 | .27 | .24 |
| 10 | .09 | .06 | .06 | .17 | .07 | .11 | .02 | .18 | .23 | 1.00 | .20 | .12 | .33 |
| 11 | .09 | .20 | .17 | .30 | .23 | .30 | .20 | .35 | .38 | .20 | 1.00 | .34 | .30 |
| 12 | .03 | .12 | .14 | .23 | .13 | .15 | .20 | .18 | .27 | .12 | .34 | 1.00 | .22 |
| 13 | .13 | .18 | .21 | .27 | .16 | .17 | .24 | .15 | .24 | .33 | .30 | .22 | 1.00 |
| MAX SCORE | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 3 | 3 | 3 | 1 | 1 | 4 |
| MEAN | .92 | 1.24 | .37 | 1.04 | .82 | .39 | .37 | 2.39 | 1.66 | 1.62 | .60 | .24 | 1.42 |
| SD | .82 | .81 | .49 | .84 | .38 | .49 | .48 | 1.10 | 1.07 | .83 | .49 | .43 | 1.05 |
| CORR(I,T) | .30 | .50 | .41 | .58 | .33 | .34 | .43 | .51 | .68 | .46 | .61 | .44 | .61 |

TOTAL TEST: MEAN = 13.08 SD = 4.62 ALPHA = .71

NUMBER OF SUBJECTS: 360

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, MATHEMATICS ASSESSMENT 7

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .36 | .49 | .55 | .42 | .30 | .54 | .38 | .27 | .48 | .45 | .44 | .32 |
| 2 | .36 | 1.00 | .31 | .35 | .28 | .36 | .25 | .46 | .31 | .37 | .34 | .46 | .38 |
| 3 | .49 | .31 | 1.00 | .71 | .64 | .25 | .48 | .24 | .23 | .41 | .38 | .38 | .23 |
| 4 | .55 | .35 | .71 | 1.00 | .58 | .32 | .41 | .29 | .27 | .40 | .37 | .38 | .24 |
| 5 | .42 | .28 | .64 | .58 | 1.00 | .25 | .34 | .23 | .19 | .36 | .34 | .33 | .20 |
| 6 | .30 | .36 | .25 | .32 | .25 | 1.00 | .19 | .34 | .23 | .29 | .22 | .28 | .24 |
| 7 | .54 | .25 | .48 | .41 | .34 | .19 | 1.00 | .26 | .27 | .42 | .38 | .34 | .24 |
| 8 | .38 | .46 | .24 | .29 | .23 | .34 | .26 | 1.00 | .30 | .48 | .43 | .53 | .49 |
| 9 | .27 | .31 | .23 | .27 | .19 | .23 | .27 | .30 | 1.00 | .32 | .29 | .29 | .25 |
| 10 | .48 | .37 | .41 | .40 | .36 | .29 | .42 | .48 | .32 | 1.00 | .81 | .56 | .42 |
| 11 | .45 | .34 | .38 | .37 | .34 | .22 | .38 | .43 | .29 | .81 | 1.00 | .51 | .41 |
| 12 | .44 | .46 | .38 | .38 | .33 | .28 | .34 | .53 | .29 | .56 | .51 | 1.00 | .57 |
| 13 | .32 | .38 | .23 | .24 | .20 | .24 | .24 | .49 | .25 | .42 | .41 | .57 | 1.00 |
| MAX SCORE | 3 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 2 |
| MEAN | 1.81 | .16 | 1.20 | .47 | 1.07 | .29 | .55 | .10 | .43 | .51 | .51 | .62 | .13 |
| SD | .93 | .38 | .84 | .50 | .90 | .46 | .50 | .30 | .50 | .72 | .73 | 1.11 | .46 |
| CORR(i,T) | .74 | .57 | .72 | .71 | .66 | .47 | .61 | .59 | .46 | .76 | .72 | .75 | .56 |

TOTAL TEST: MEAN = 7.86 SD = 5.55 ALPHA = .87

NUMBER OF SUBJECTS: 610

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, MATHEMATICS ASSESSMENT 8

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | .07 | .31 | .08 | .13 | .16 | .24 | .19 | .18 | .29 | .34 | .29 | .32 | .29 | .27 | .34 | .33 | .38 |
| 2 | .07 | 1.00 | .02 | .29 | .13 | .12 | .13 | .09 | .07 | .18 | .17 | .14 | .10 | .17 | .08 | .14 | .13 | .13 |
| 3 | .31 | .02 | 1.00 | .10 | .07 | .07 | .17 | .19 | .21 | .19 | .24 | .20 | .38 | .17 | .24 | .23 | .18 | .19 |
| 4 | .08 | .29 | .10 | 1.00 | .08 | .14 | .07 | .07 | .11 | .11 | .06 | .05 | .08 | .07 | .06 | .05 | .04 | .04 |
| 5 | .13 | .13 | .07 | .08 | 1.00 | .46 | .23 | .14 | .13 | .16 | .13 | .21 | .08 | .17 | .09 | .14 | .17 | .12 |
| 6 | .16 | .12 | .07 | .14 | .46 | 1.00 | .23 | .15 | .17 | .25 | .23 | .25 | .06 | .22 | .10 | .20 | .20 | .17 |
| 7 | .24 | .13 | .17 | .07 | .23 | .23 | 1.00 | .30 | .31 | .30 | .28 | .19 | .22 | .30 | .21 | .28 | .27 | .26 |
| 8 | .19 | .09 | .19 | .07 | .14 | .15 | .30 | 1.00 | .36 | .19 | .20 | .15 | .13 | .18 | .12 | .22 | .19 | .16 |
| 9 | .18 | .07 | .21 | .11 | .13 | .17 | .31 | .36 | 1.00 | .22 | .26 | .21 | .22 | .24 | .15 | .23 | .21 | .22 |
| 10 | .29 | .18 | .19 | .11 | .16 | .25 | .30 | .19 | .22 | 1.00 | .70 | .38 | .26 | .73 | .24 | .59 | .49 | .43 |
| 11 | .34 | .17 | .24 | .06 | .13 | .23 | .28 | .20 | .26 | .70 | 1.00 | .47 | .33 | .65 | .30 | .77 | .61 | .53 |
| 12 | .29 | .14 | .20 | .05 | .21 | .25 | .19 | .15 | .21 | .38 | .47 | 1.00 | .35 | .36 | .33 | .43 | .39 | .42 |
| 13 | .32 | .10 | .38 | .08 | .08 | .06 | .22 | .13 | .22 | .26 | .33 | .35 | 1.00 | .27 | .71 | .33 | .32 | .36 |
| 14 | .29 | .17 | .17 | .07 | .17 | .22 | .30 | .18 | .24 | .73 | .65 | .36 | .27 | 1.00 | .29 | .73 | .62 | .47 |
| 15 | .27 | .08 | .24 | .06 | .09 | .10 | .21 | .12 | .15 | .24 | .30 | .33 | .71 | .29 | 1.00 | .36 | .30 | .31 |
| 16 | .34 | .14 | .23 | .05 | .14 | .20 | .28 | .22 | .23 | .59 | .77 | .43 | .33 | .73 | .36 | 1.00 | .72 | .56 |
| 17 | .33 | .13 | .18 | .04 | .17 | .20 | .27 | .19 | .21 | .49 | .61 | .39 | .32 | .62 | .30 | .72 | 1.00 | .55 |
| 18 | .38 | .13 | .19 | .04 | .12 | .17 | .26 | .16 | .22 | .43 | .53 | .42 | .36 | .47 | .31 | .56 | .55 | 1.00 |
| MAX SCORE | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 1 |
| MEAN | .28 | .75 | .07 | .57 | .64 | .47 | .95 | .42 | .39 | 1.01 | .72 | .63 | .07 | .86 | .06 | .58 | .51 | .22 |
| SD | .67 | .44 | .36 | .50 | .49 | .50 | .92 | .76 | .76 | .93 | .92 | .77 | .25 | .95 | .24 | .89 | .80 | .42 |
| CORR(i,T) | .52 | .29 | .37 | .21 | .34 | .41 | .54 | .43 | .47 | .75 | .80 | .59 | .48 | .77 | .45 | .80 | .72 | .64 |

TOTAL TEST: MEAN = 9.19 SD = 6.66 ALPHA = .86

NUMBER OF SUBJECTS: 765



BEST COPY AVAILABLE

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, WRITING ASSESSMENT 1

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .54 |
| 2 | .54 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.50 | 2.71 |
| SD | .89 | .91 |
| CORR(I,T) | .87 | .88 |

TOTAL TEST: MEAN = 5.22 SD = 1.59 ALPHA = .70

NUMBER OF SUBJECTS: 590

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, WRITING ASSESSMENT 2

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .68 |
| 2 | .68 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.68 | 2.76 |
| SD | 1.00 | 1.03 |
| CORR(I,T) | .91 | .92 |

TOTAL TEST: MEAN = 5.43 SD = 1.85 ALPHA = .81

NUMBER OF SUBJECTS: 584

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, WRITING ASSESSMENT 3

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .70 |
| 2 | .70 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.48 | 2.68 |
| SD | 1.03 | 1.06 |
| CORR(I,T) | .92 | .93 |

TOTAL TEST: MEAN = 5.17 SD = 1.93 ALPHA = .83

NUMBER OF SUBJECTS: 542

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, WRITING ASSESSMENT 4

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .71 |
| 2 | .71 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.78 | 3.01 |
| SD | 1.02 | .99 |
| CORR(I,T) | .93 | .92 |

TOTAL TEST: MEAN = 5.79 SD = 1.86 ALPHA = .83

NUMBER OF SUBJECTS: 521

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, WRITING ASSESSMENT 5

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .66 |
| 2 | .66 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.93 | 3.19 |
| SD | .85 | .87 |
| CORR(I,T) | .91 | .91 |

TOTAL TEST: MEAN = 6.11 SD = 1.57 ALPHA = .80

NUMBER OF SUBJECTS: 588

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, WRITING ASSESSMENT 6

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .72 |
| 2 | .72 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.65 | 3.04 |
| SD | .97 | 1.00 |
| CORR(I,T) | .93 | .93 |

TOTAL TEST: MEAN = 5.69 SD = 1.83 ALPHA = .84

NUMBER OF SUBJECTS: 500

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, WRITING ASSESSMENT 7

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .69 |
| 2 | .69 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.70 | 2.96 |
| SD | .97 | 1.02 |
| CORR(I,T) | .92 | .92 |

TOTAL TEST: MEAN = 5.66 SD = 1.83 ALPHA = .82

NUMBER OF SUBJECTS: 679

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, WRITING ASSESSMENT 8

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .51 |
| 2 | .51 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.48 | 2.94 |
| SD | 1.00 | .95 |
| CORR(I,T) | .88 | .86 |

TOTAL TEST: MEAN = 5.42 SD = 1.69 ALPHA = .68

NUMBER OF SUBJECTS: 554

CORRELATIONAL DATA FOR THE ARIZONA STUDENT ASSESSMENT PROGRAM--GRADE 12, WRITING ASSESSMENT 9

| | 1 | 2 |
|---|---|---|
| 1 | 1.00 | .59 |
| 2 | .59 | 1.00 |
| MAX SCORE | 4 | 4 |
| MEAN | 2.77 | 2.86 |
| SD | 1.01 | .99 |
| CORR(I,T) | .89 | .89 |

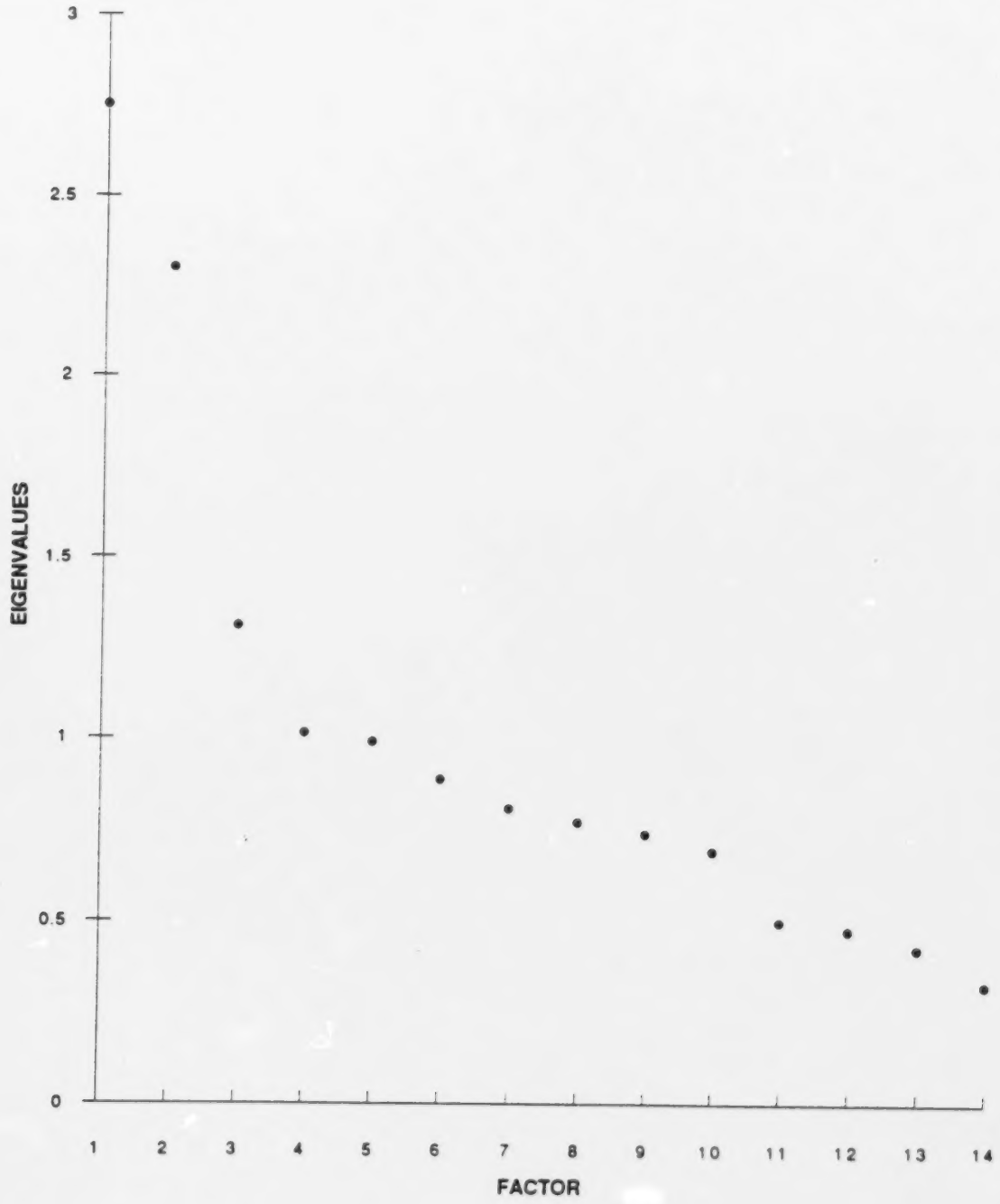
TOTAL TEST: MEAN = 5.62 SD = 1.79 ALPHA = .74

NUMBER OF SUBJECTS: 611

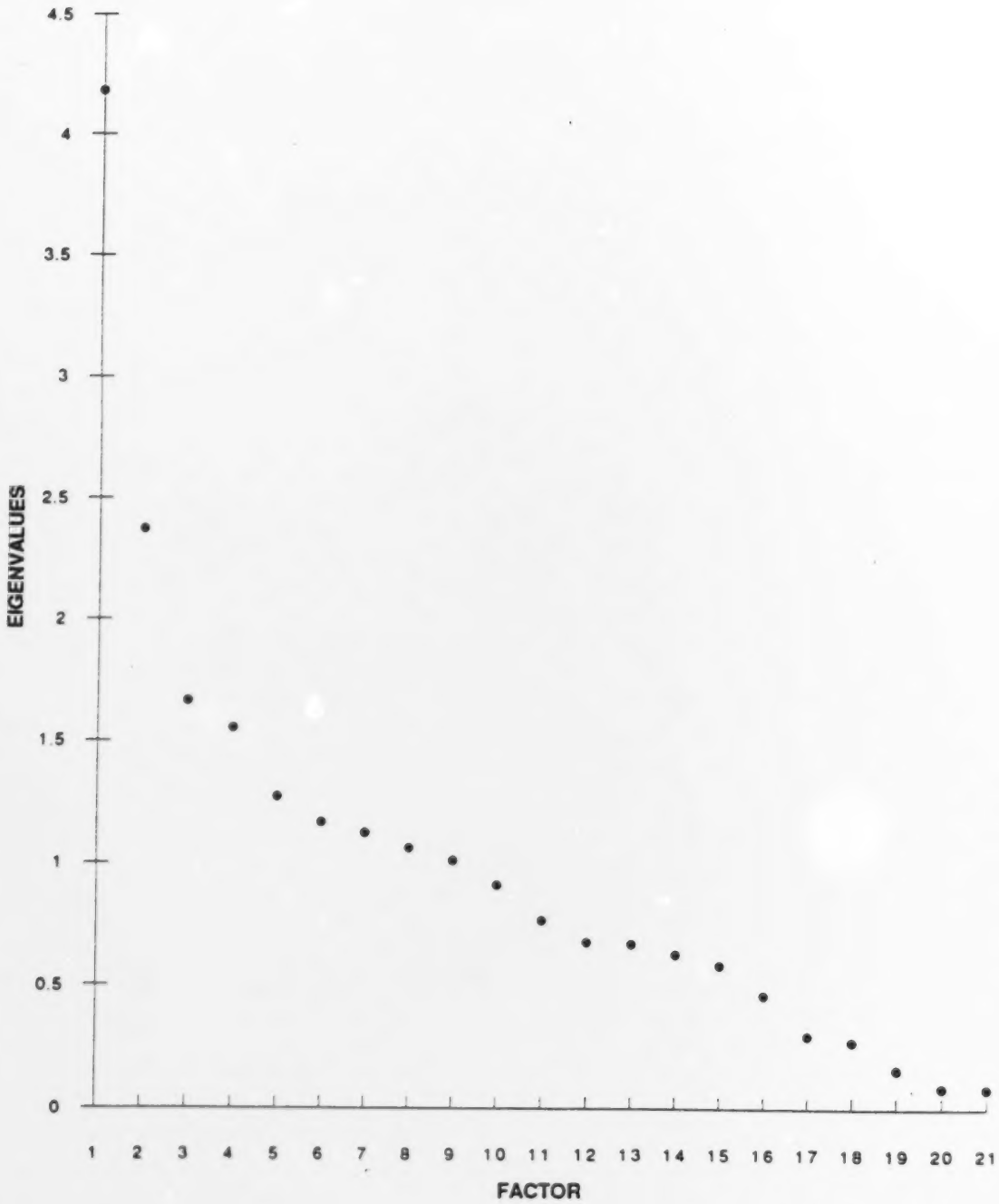
# APPENDIX C

## SELECTED SCREE PLOTS

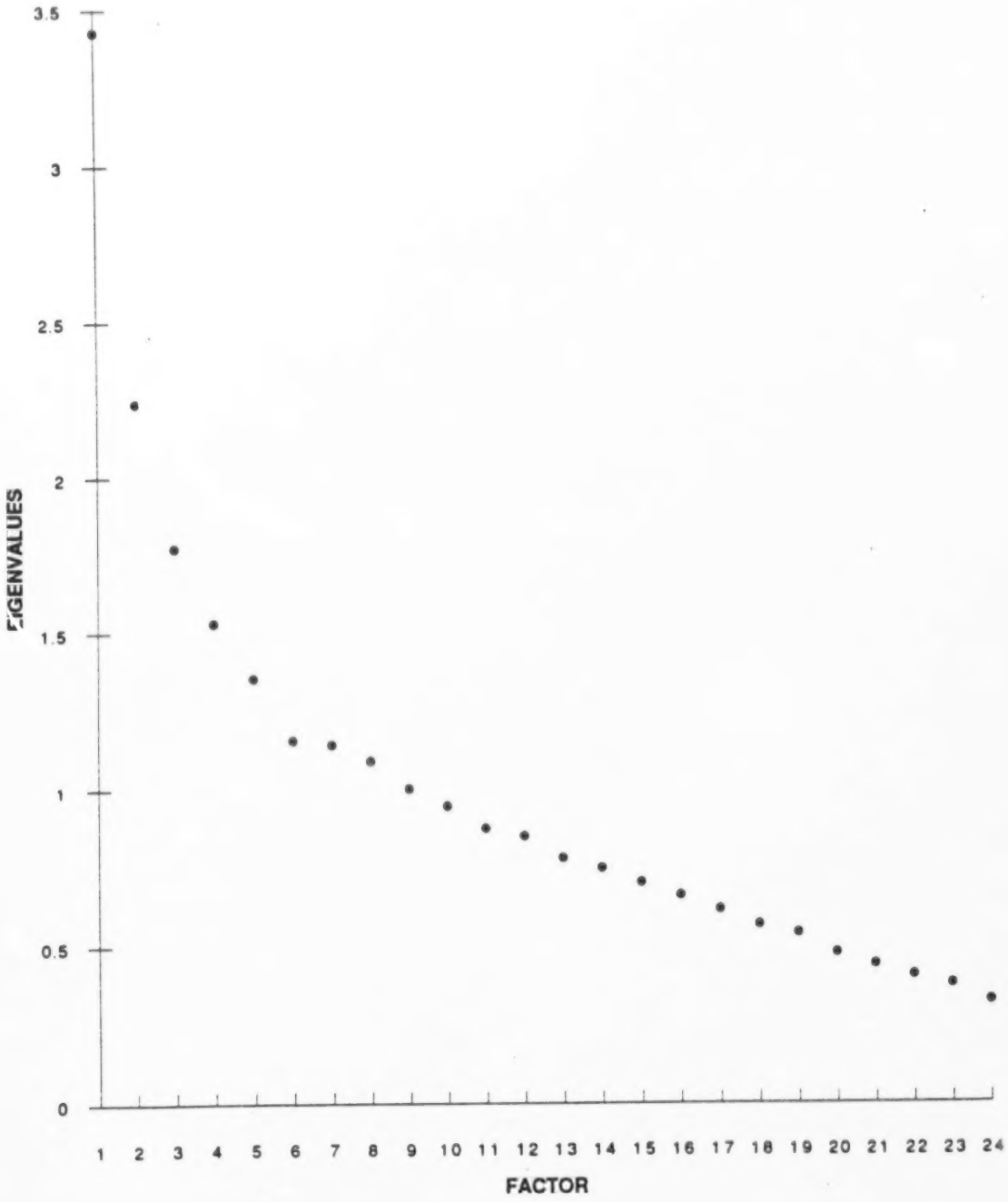
## 3M-3 SCREE PLOT



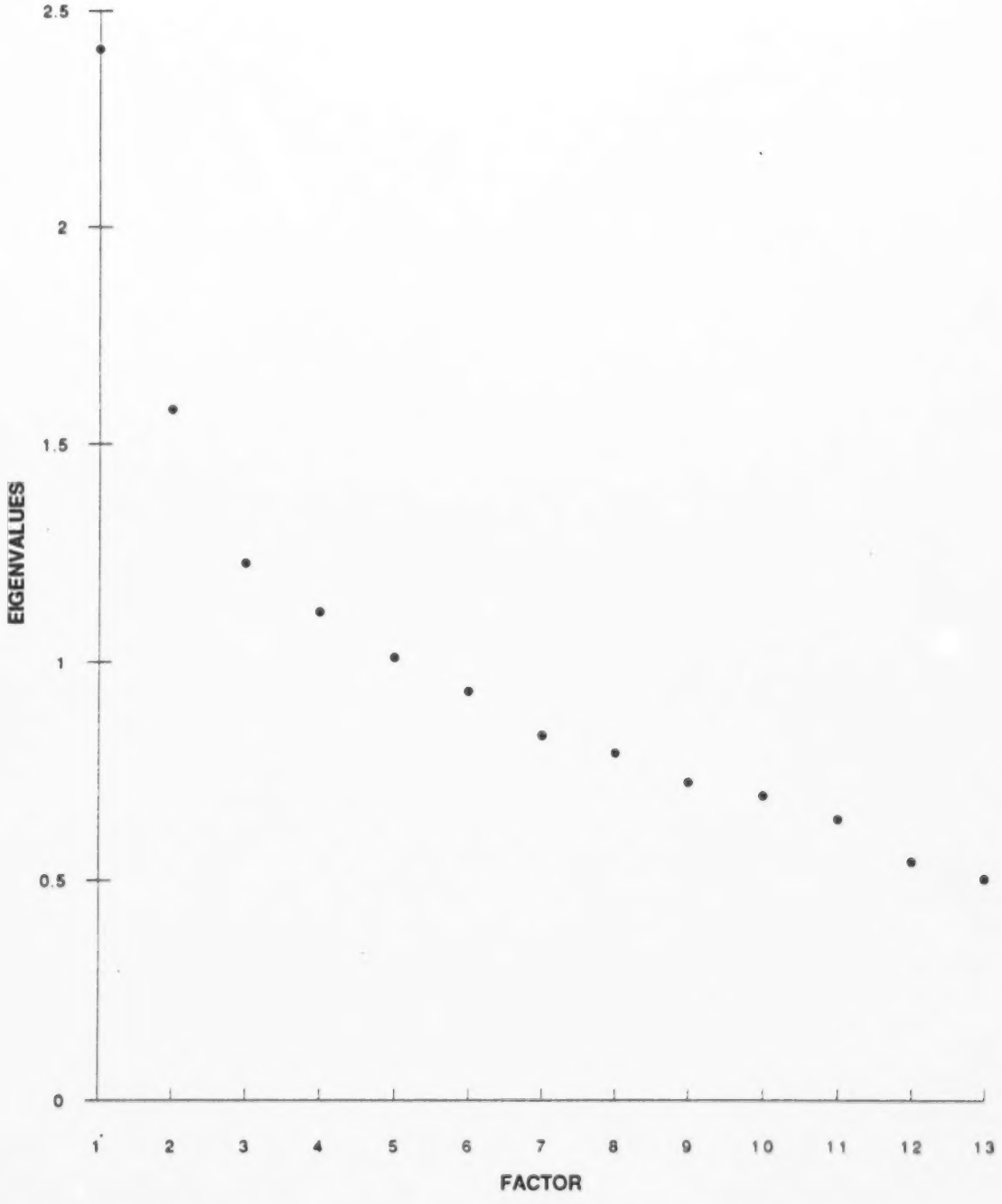
## 3M-4 SCREE PLOT



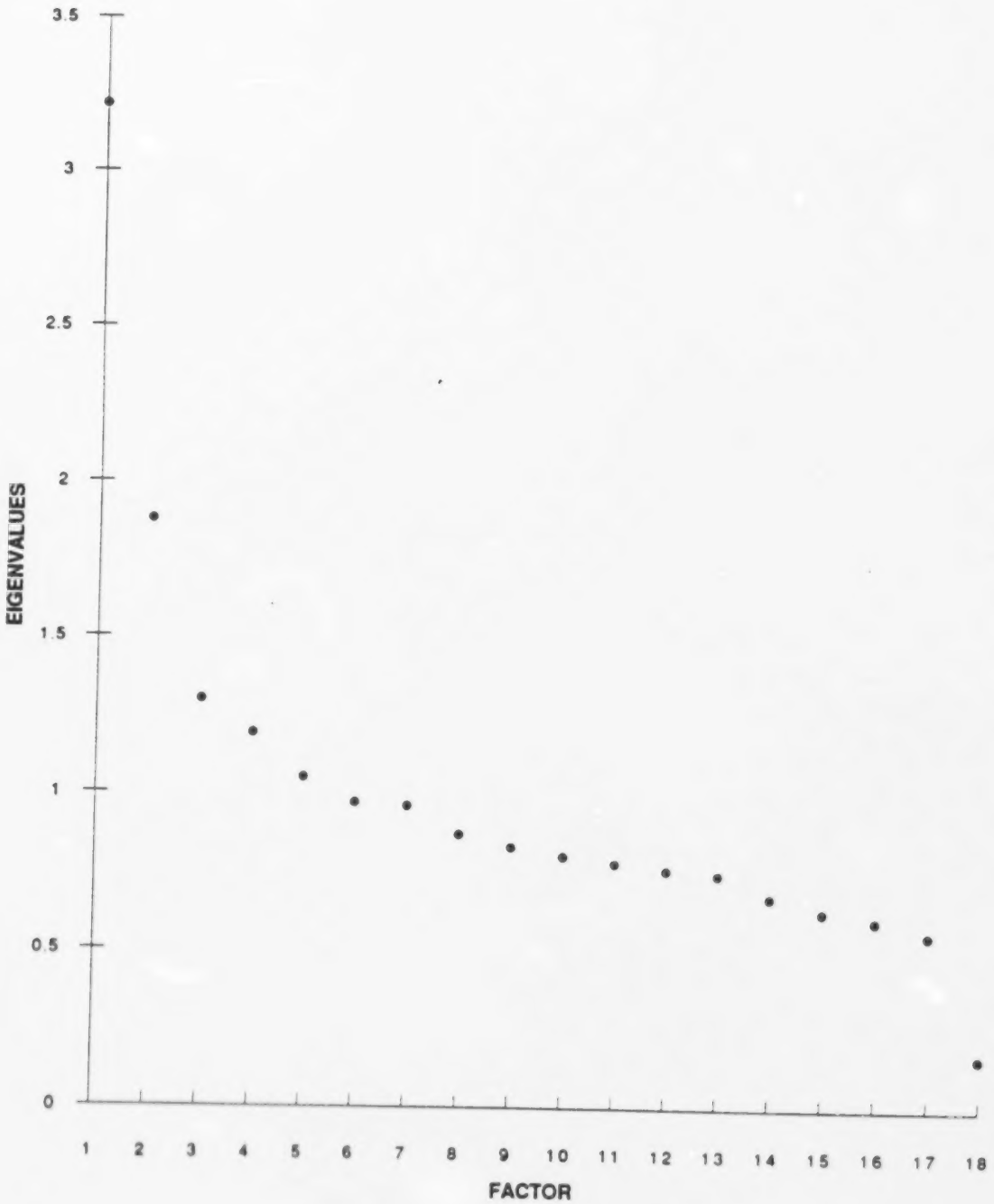
## 3M-5 SCREE PLOT



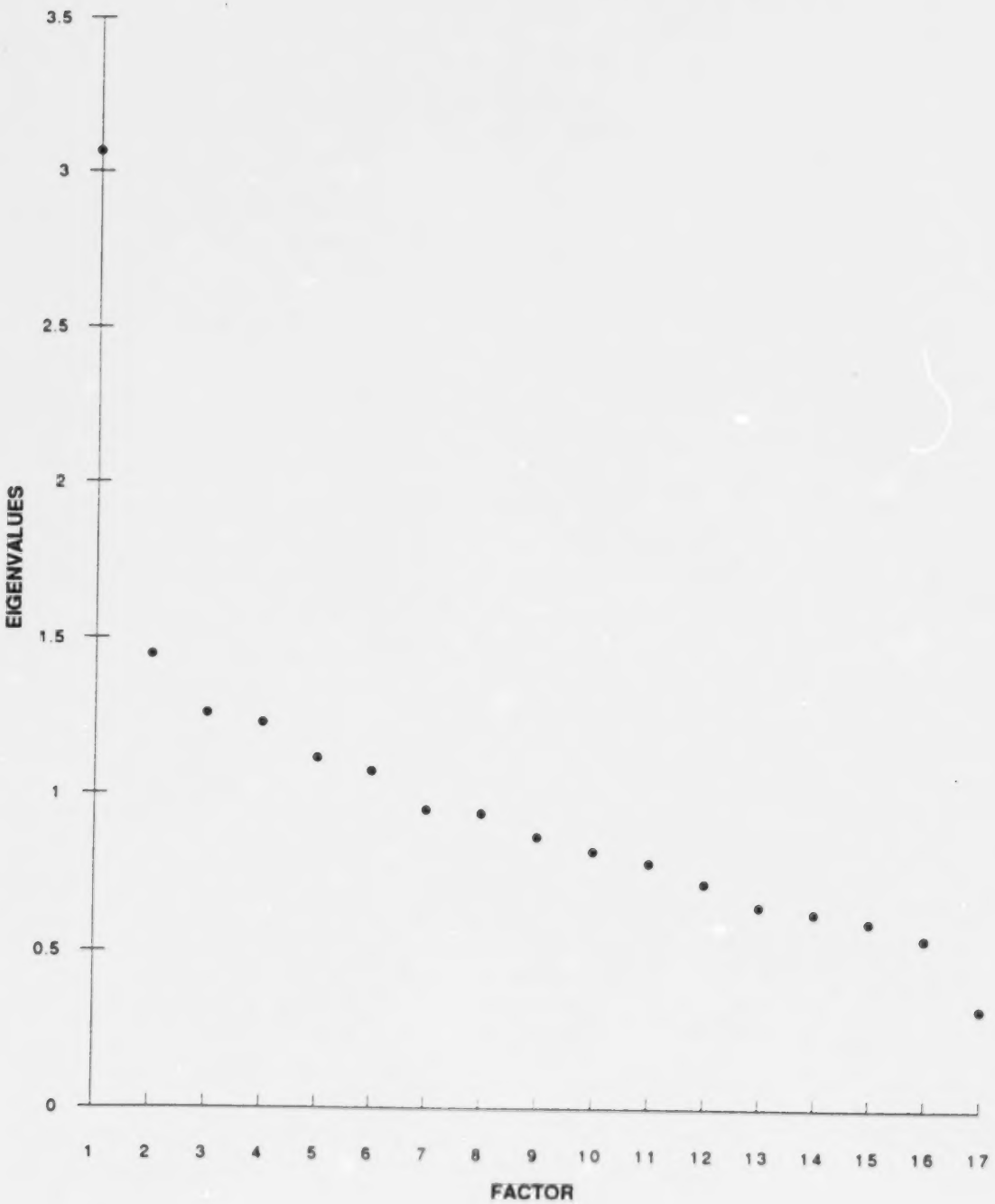
## 3M-7 SCREE PLOT



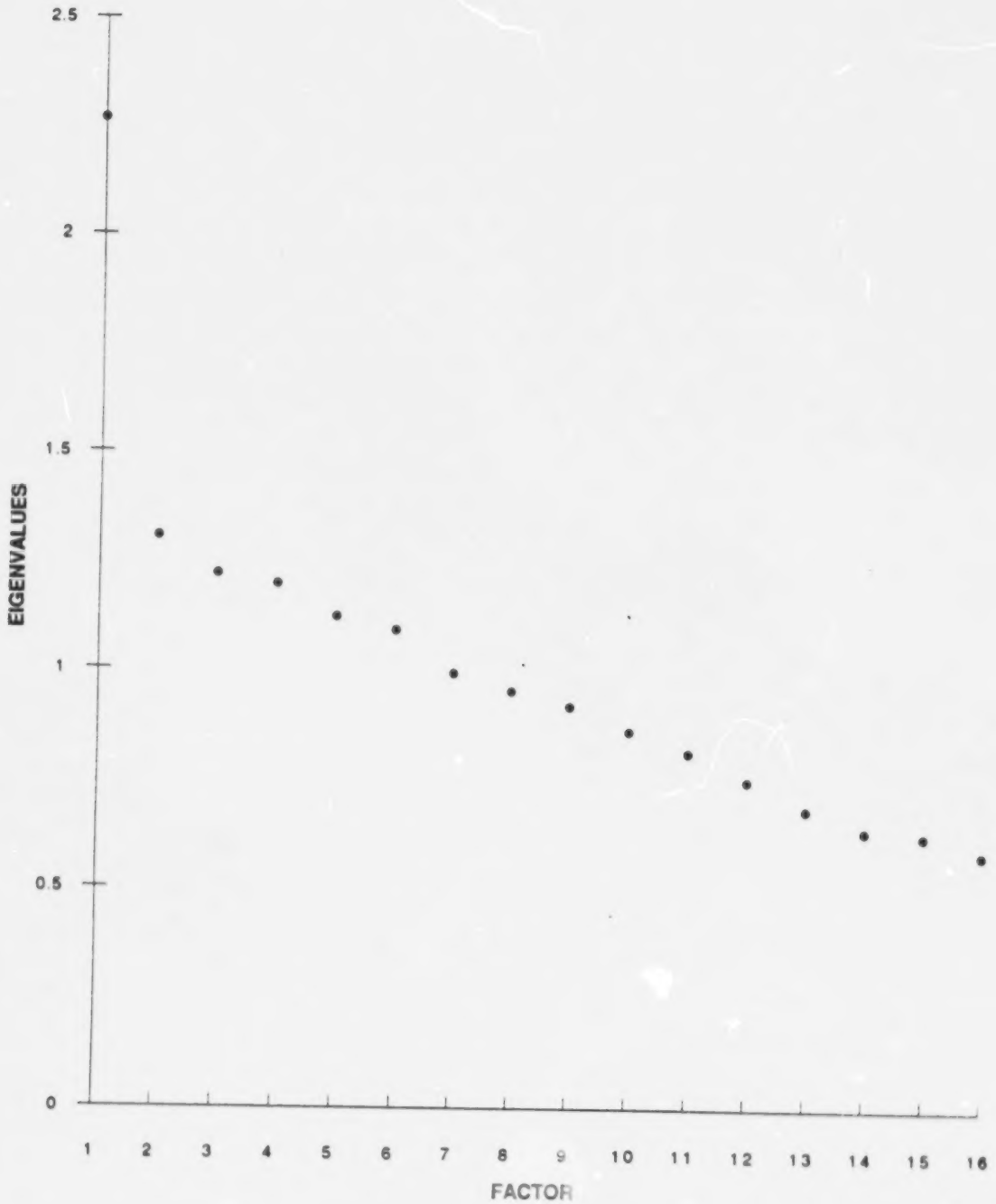
## 8M-1 SCREE PLOT



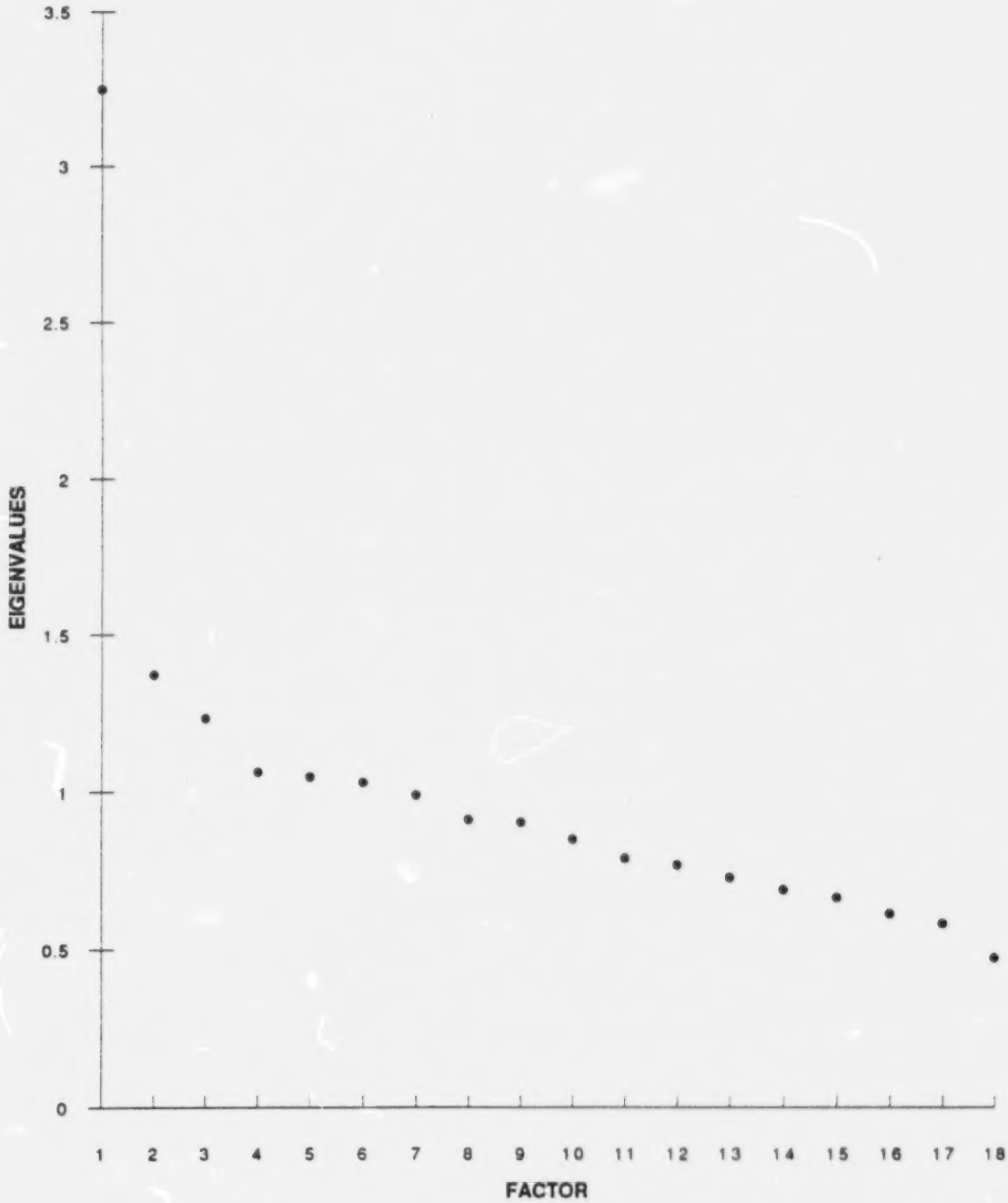
## 8R-3 SCREE PLOT



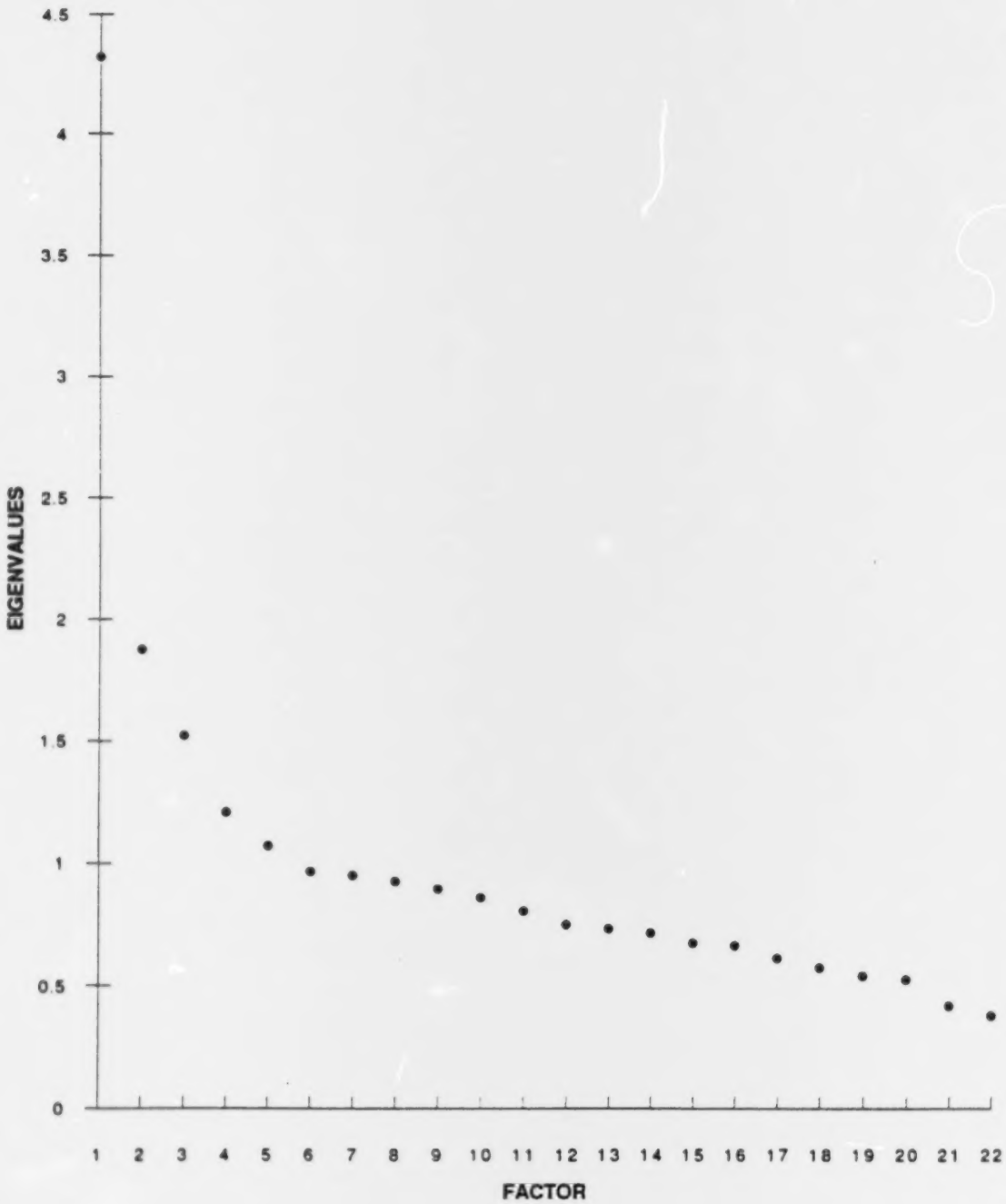
## 8R-5 SCREE PLOT



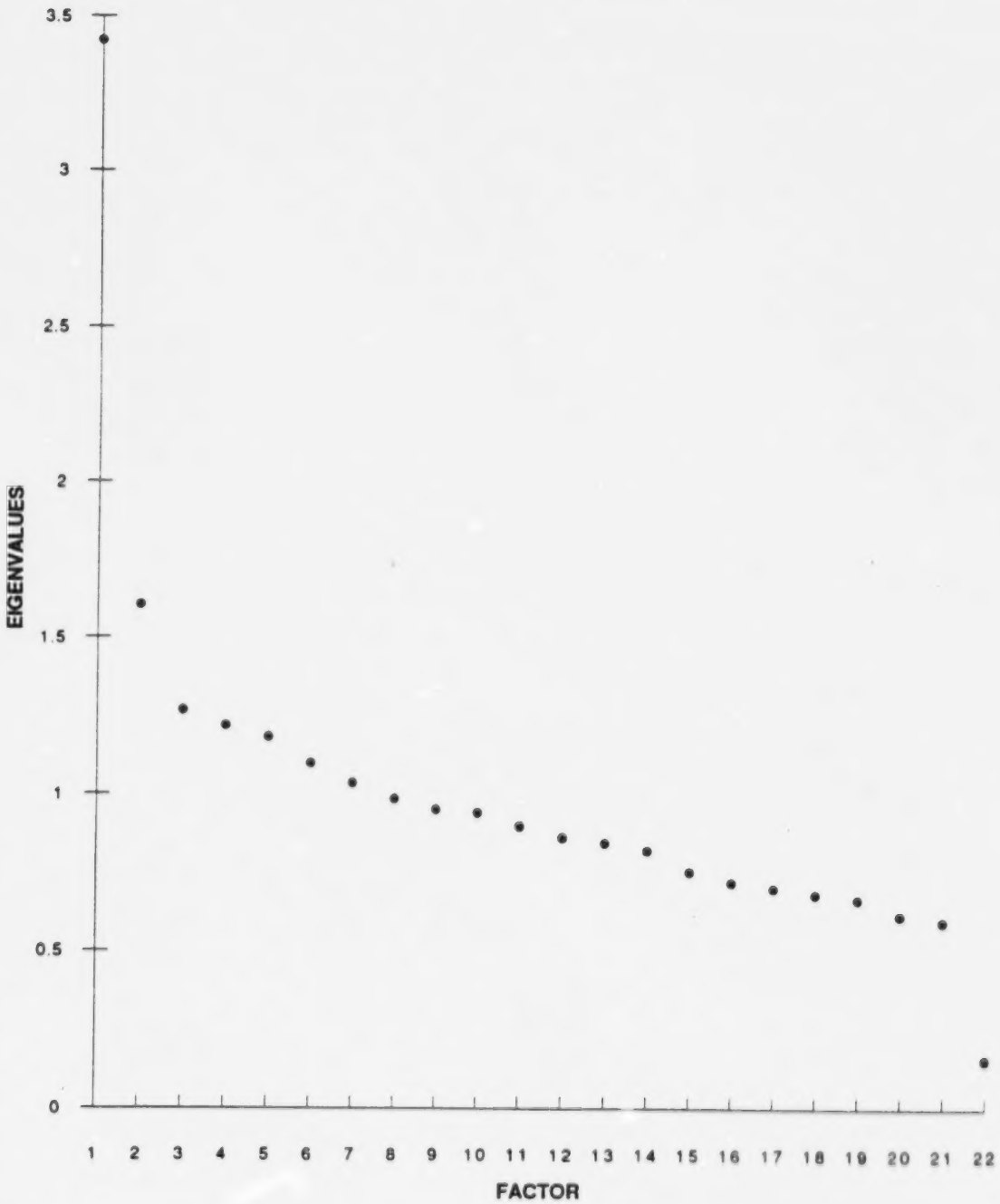
## 8R-7 SCREE PLOT



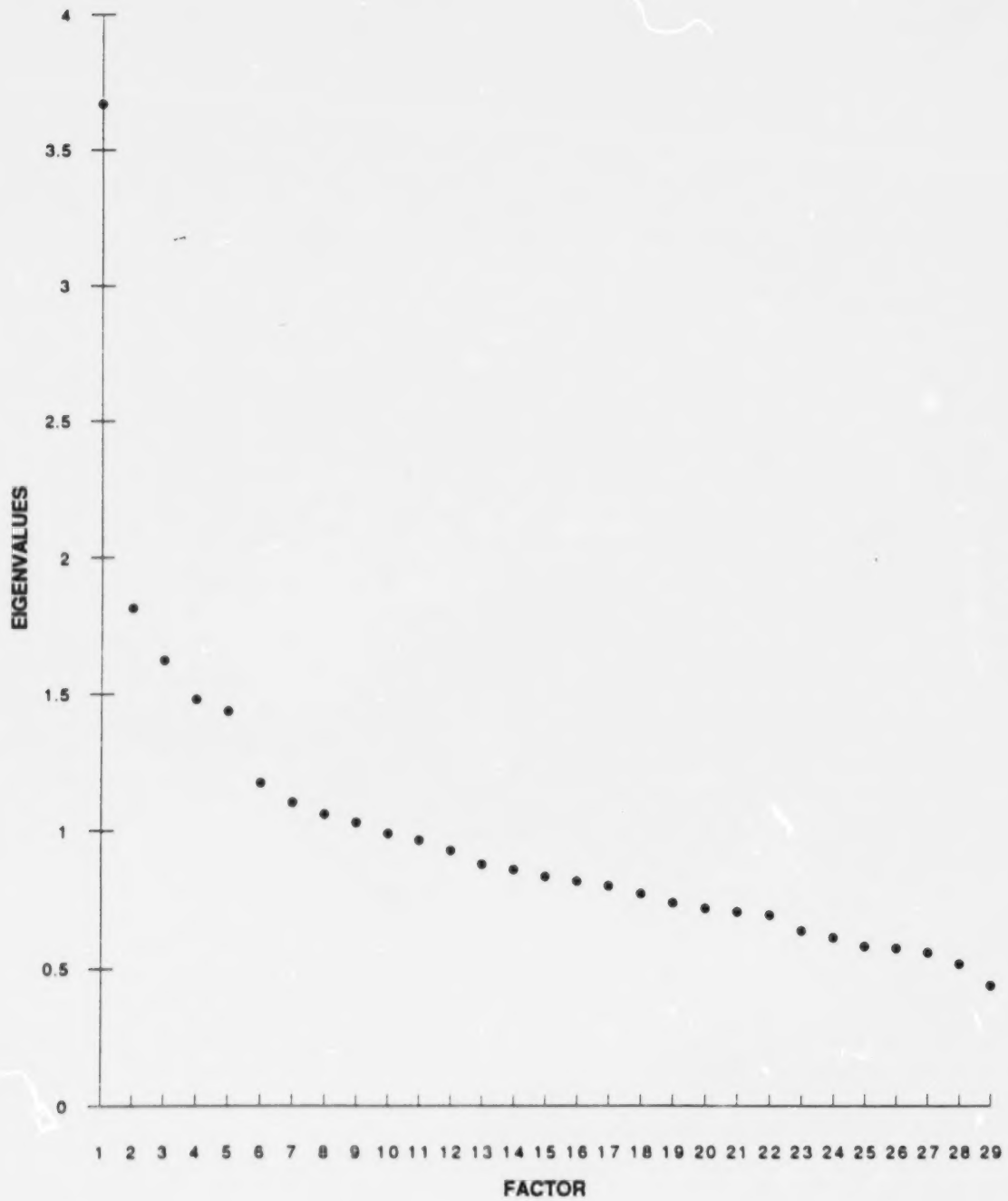
## 12R-2 SCREE PLOT



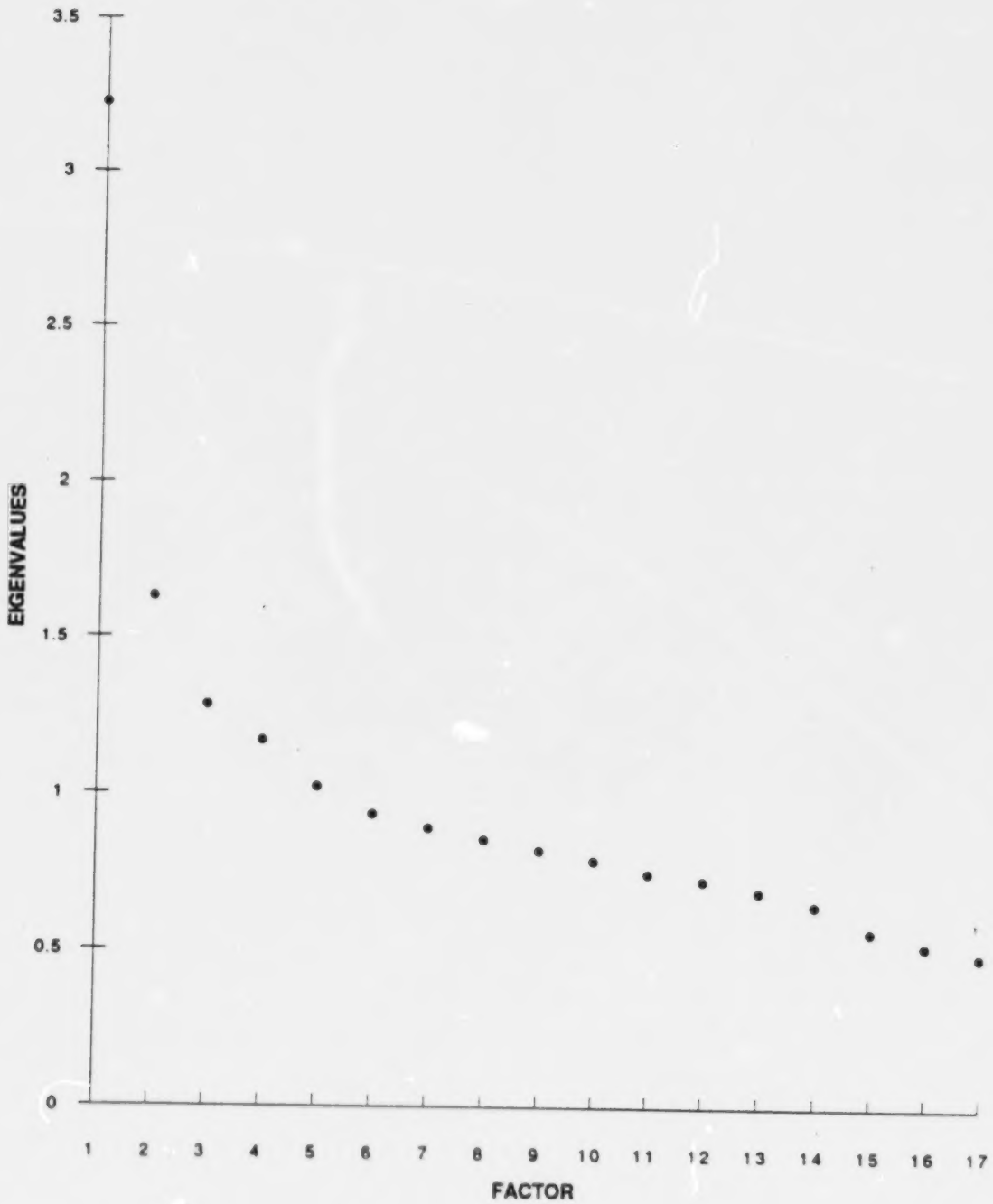
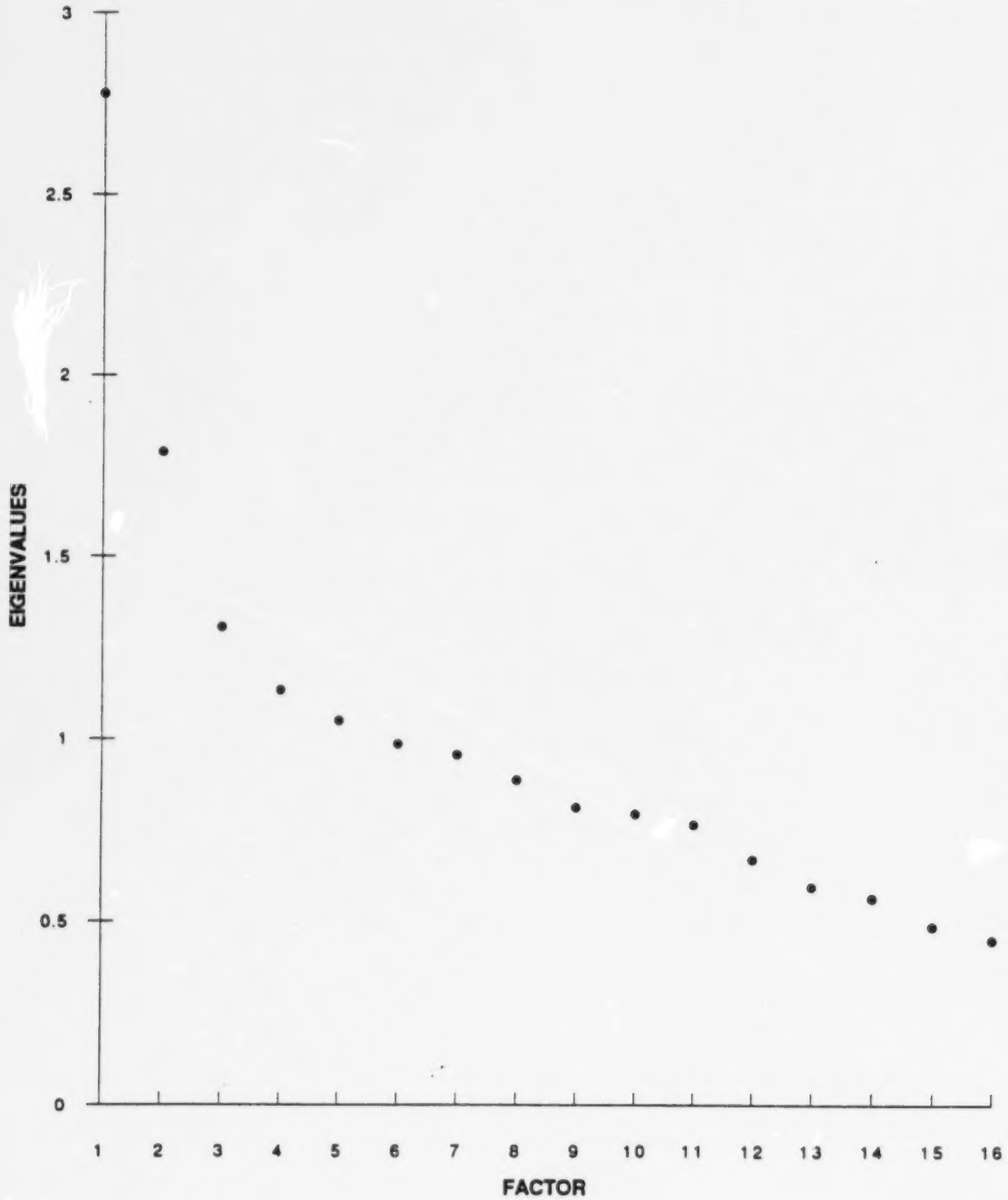
## 12R-3 SCREE PLOT



## 12R-4 SCREE PLOT



# 12R-7 SCREE PLOT



## 12R-8 SCREE PLOT